TABLE OF CONTENTS

Section		Page
I	Introduction	1
II	Description	1
	1. General	1
	2. Detailed	1
III	Preparation for Use	6
	1. General	6
	2. Cleaning Lenses	6
IV	Operation	6
	1. Principles of Operation	6
	2. Operation Instructions	7
V	Service Inspection, Maintenance, and Lubrication	18
	1. Service Tools Required	18
	2. Service Inspection and Maintenance	18
	3. Lubrication	19
	4. Service Troubles and Remedies	19
VI	Disassembly, Inspection, Repair, and Reassembly	20
	1. Overhaul Tools Required	20
	2. Disassembly	20
	a. Lens Unit and Film Chamber	20
	b. Front Complete with Lens Turret Assembly	20
	c. Shutter	23
	d. Crank	23
	e. Etched Control Plate	23
	f. Speed Indicator Dial	23
	g. Starting Button and Starting Lever Guide	23
	h. Chamber Locking Lever Complete	23
	i. Footage Indicator Dial	23
	j. Removing Mechanism from Case	23
	k. Single Picture Lever Knob and Crank Release Lock Slide	23
	l. Removing Remaining Tension in Motor Spring	23
	m. Single-Frame Shaft Drive Coupling Complete	24
	n. Separating Mechanism Plates	24
	o. Removing Parts from the Mechanism Bottom Plate	27
	p. Mechanism Top Plate	28
	q. Case Covered with Carry Handle	29
	3. Cleaning, Inspection, Testing, and Repair	29
	4. Reassembly of Camera Mechanism	29
	a. Mechanism Bottom Plate	29
	b. Mechanism Top Plate Assembly	31
	c. Assembling Mechanism Top and Bottom Plates	32
	d. Timing Mechanism	32
	e. Installing New Shutter Blades	32
	f. Starting Lever Link	32
	g. Brake Lever Bracket	32
	h. Single-Frame Drive Coupling Complete	33
	i. Adjusting Signal Device Disk and Motor Tension	33
	j. Adjusting Speed of Mechanism	33
	k. Single Picture Lever Knob and Crank Release	33
	l. Replacing Mechanism in Case	33
	m. Footage Indicator Dial	34
	n. Chamber Locking Lever with Button	34
	o. Starting Button and Starting Lever Guide	34
	p. Speed Indicator Dial	34
	q. Frame Counter Window Complete	34
	r. Etched Control Plate	34
	s. Shutter	34
	t. Front Complete	34
	u. Turret Guide Plate to Front	34
	v. Alignment of Front	35
	w. Film Gate Stop Plate	35
	x. Winding Cranks, Film Chamber, and Lenses	36
	5. Disassembly of 100-Foot Film Chamber	36
	6. Reassembly of 100-Foot Film Chamber	38
	7. Disassembly of Ciné-Kodak Tripod	39
	8. Reassembly of Ciné-Kodak Tripod	40
VII	Test Procedure	41
	1. Visual Focus Check	41
	2. Reflex Finder Check with Film	4
	3. Film Focus Check	4
	4. Frame-Line Test	4
	5. Reflex Finder Registration Check	4
	6. Focus Checks	
	7. Steadiness Test	
	8. Fade-In and Fade-Out Test	
	9. Analysis of Tests	
VIII	Parts Catalog Introduction	
IX	Group Assembly Parts List	
X	Numerical Parts List	

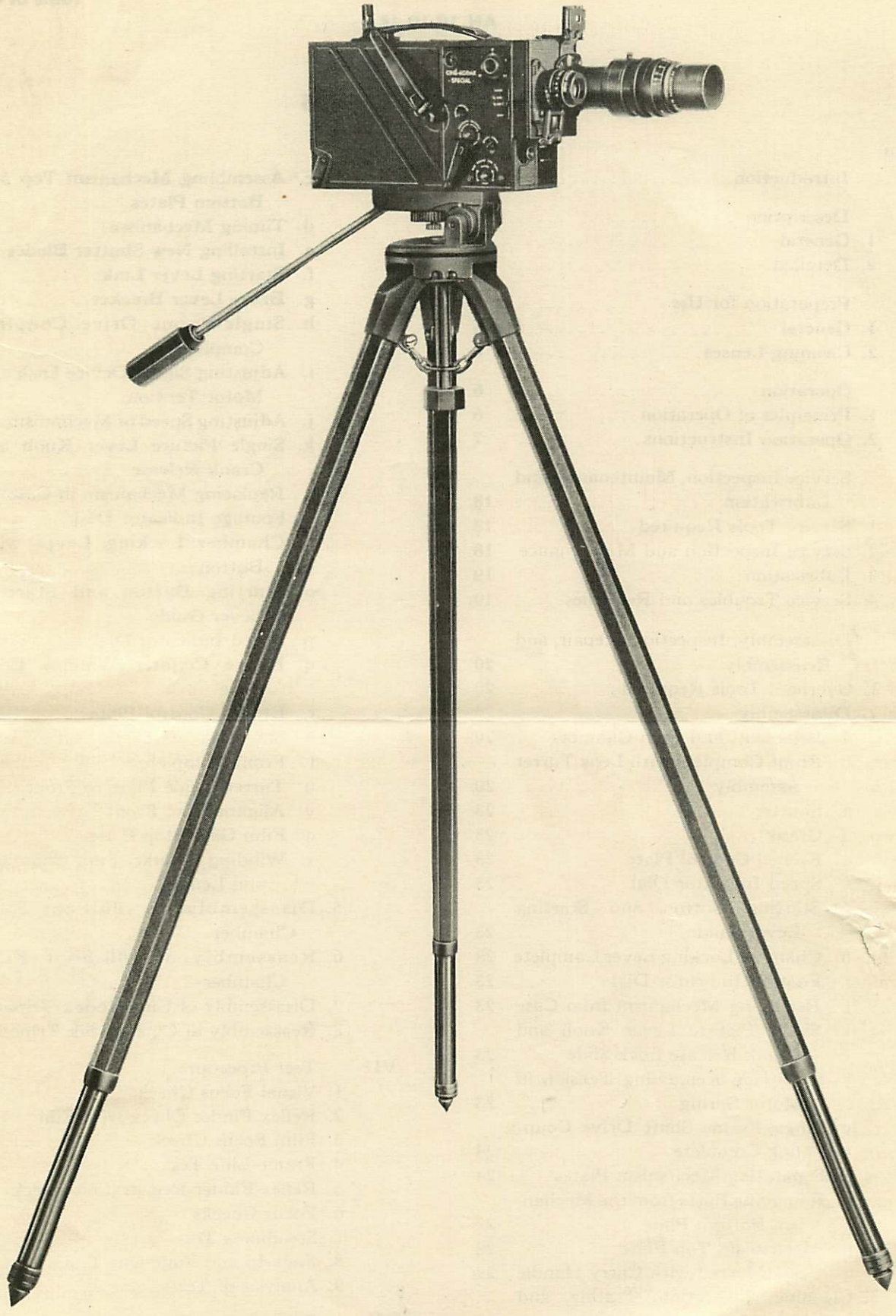


Figure 1—Ciné-Kodak Special Mounted on Tripod

SECTION I
INTRODUCTION

This Handbook contains descriptive data on and instructions for the Operation, Maintenance, and Service of the Ciné-Kodak Special, Standard Stock No. 18-C-184-75, manufactured by the Eastman Kodak Co., Rochester, N. Y.

SECTION II
DESCRIPTION

1. GENERAL.

a. The Ciné-Kodak Special is a 16-mm silent motion picture camera for use in general or specialized photography.

b. An *f*/1.9 Kodak anastigmat lens with a focal length of 25 mm is supplied with the camera. A 15-mm wide angle lens, and a 63-mm and a 152-mm long focus lens are also available for rapid attachment to the lens turret. The standard 25-mm lens is permanently mounted in a lens adapter. The accessory lenses have detachable lens adapters which are interchangeable on the two long focus lenses.

c. The principal features of the Ciné-Kodak Special are outlined below.

(1) VARIABLE OPERATING SPEEDS.—The Ciné-Kodak Special has variable operating speeds of 8 to 64 frames per second.

(2) TWO FINDERS.—A direct view finder for general use and a reflex finder for precision work are provided on the camera.

(3) ADJUSTABLE OPENING SHUTTER.—The shutter is adjustable during operation from open to ½ open, ¼ open, or closed. It is used for fades or dissolves and adds a degree of exposure control useful under certain operating conditions.

(4) HAND-CRANKING SHAFTS.—These shafts permit the camera to be operated forward or in reverse at one or eight frames per revolution.

(5) SINGLE-FRAME RELEASE.—The single-frame release button permits the exposure of single frames.

(6) LENS TURRET.—Two lenses can be mounted on the turret. A half revolution of the turret brings the idle lens into use.

(7) FILM METERS.—Three film meters are provided. A footage meter, which is integral with the film chamber, shows in feet the amount of unexposed film contained. On the camera mechanism itself are a footage meter and a frame counter. The footage meter shows the amount of film run or rewound at any time; the frame counter provides an accurate recording of the number of individual frames involved in any run, forward or reverse.

(8) STARTING BUTTON.—The starting button is located on the front of the case below the front. It can be locked in the running position by pushing it in and down.

(9) INTERCHANGEABLE FILM CHAMBERS.—Film chambers of 100-foot capacity are interchangeable on the mechanism of the camera. Two 100-foot chambers are supplied.

(10) UNIVERSAL EXPOSURE GUIDE.—The universal guide, attached to all film chambers, permits the rapid selection of lens settings under varying light conditions.

2. DETAILED. (See figure 2.)

a. GENERAL.—The Ciné-Kodak Special consists essentially of the camera case with mechanism and controls, the front with lens turret assembly, and the 100-foot film chamber.

b. FRONT WITH LENS TURRET ASSEMBLY.—The front and lens turret assembly (8) is con-

structed of metal and finished in dull black. The front is attached to the camera mechanism by four screws and houses the shutter and reflex finder.

(1) The reflex finder (4) consists of a finder cover slide assembly which is operated by a button (6) on the top of the front. Sighting and focusing can be accomplished through the lens. The actual image formed by the lens can be seen through the reflex finder. Sharpness of subject and field size, as it will be recorded on the film, can be determined before the picture is taken.

(2) The lens turret is attached to the front by means of four screws. The turret can be rotated on a pivot to place either of two lenses in position for shooting. Two studs are provided at each lens hole in the turret for accurately attaching lens adapters. The lenses are locked in position with a lens adapter lock (7). One opening can be covered with the lens hole cap, which is held in place by means of a spring.

c. CARRY HANDLE.—A carry handle (2) is attached to the top of the camera mechanism. It can be flattened to the camera case when the camera is in use.

d. FOOTAGE INDICATOR DIAL.—The footage indicator dial (25) is mounted on top of the case directly beneath the carry handle. The indicator is a circular dial approximately one inch in diameter with etched divisions from 0 to 100. It indicates in *feet* the film *exposed* by the camera.

e. ETCHED CONTROL PLATE.—The control plate is a black metal plate etched with white letters. It is mounted on the front right-hand side of the case. Functional names and instructions are inscribed on the plate.

f. SPEED INDICATOR KNOB.—Extending through the etched control plate, in the upper right-hand corner, is the speed indicator knob (23). This knob controls the speed of the motor. The numbers, 8, 16, 32, and 64, etched in the control plate around the speed indicator knob, indicate the frames per second passing the lens opening. The knob can be set at any of the four indicated positions or at any intermediate point.

g. FRAME COUNTER DIAL.—Through the frame counter dial window in the upper left-hand corner of the etched control plate the frame counter dial (24) can be seen. It is graduated from 0 to 40 and is attached directly to the mechanism. Each revolution of the counter indicates that 40 frames (one foot of film) have passed through the gate of the camera. The frame counter is particularly useful when making single-frame, double, and multiple exposures.

h. SHUTTER OPERATING LEVER.—The shutter lever (21) operates through an opening in the etched control plate and sets the position of the shutter. The four shutter positions are "CLOSED," "¼ OPEN," "½ OPEN," and "OPEN."

i. SINGLE PICTURE LEVER.—The single picture knob (18) extends through an opening in the etched control plate. This opening is marked "SINGLE FRAME." The lever is used for exposing single frames.

j. SINGLE-FRAME SHAFT.—Extending through the etched control plate near the bottom, the single-frame shaft (15) provides the means of exposing or winding back single frames when the small crank is attached. Inscribed on the plate around the opening are "ONE FRAME PER TURN," "CLOSED," "R" arrow, "F" arrow, and "OPEN."

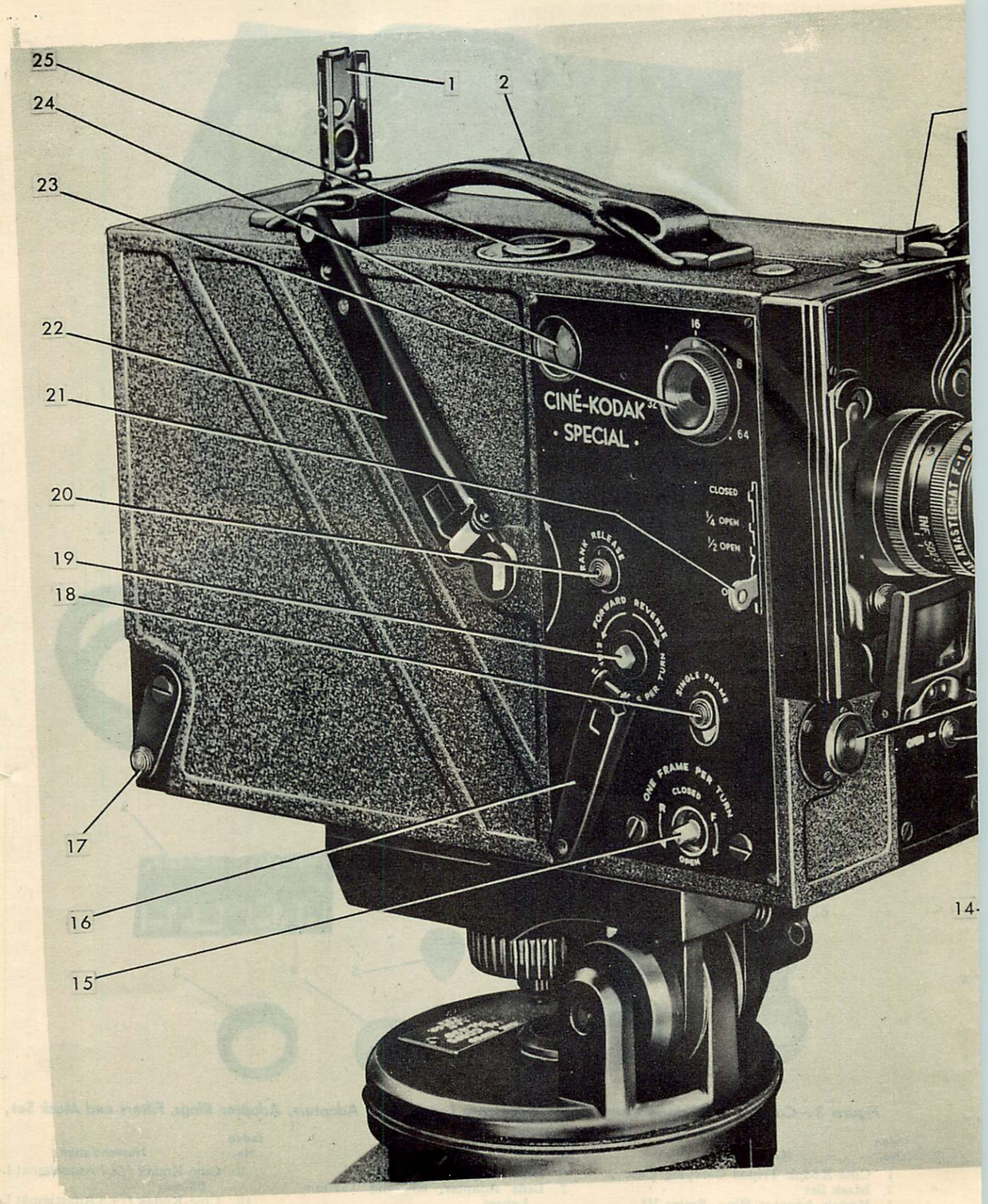
k. EIGHT-FRAME SHAFT.—The eight-frame shaft (19) is similar to the single-frame shaft except that one complete turn of the crank exposes or winds eight frames of film. Inscribed on the plate around the shaft are the words "FORWARD," "REVERSE," and "EIGHT FRAMES PER TURN." The small crank is held to this shaft or the single-frame shaft by means of the crank release lever. The handle of the crank, when not in use, is secured by a spring located in a cutout at the bottom of the case.

l. CRANK RELEASE.—The crank release is operated by a knob (20) which extends through the etched control plate. The knob is attached to a locking slide which slips into a flange in the crank hinge plate and secures the crank to either shaft.

m. LARGE WINDING CRANK.—The large winding crank (22) is secured to the motor shaft on the right-hand side of the case. When not being used for winding, the crank lies flat against the side of the case with the handle extending over the top of the case. A locating spring in the crank lever retains the lever on a stud which extends from the case.

n. STARTING BUTTON.—The starting button (9) is located on the front of the camera case directly beneath the front. Pushing the starting button in starts the motor; releasing the button stops the motor. It can be locked in the run position by pushing it in and down.

o. CHAMBER LOCKING LEVER.—The chamber locking lever (17) is located in the lower right-hand corner of the case. It is attached to a shaft which extends through the camera case. An eccentric cam on the end of the shaft fits into an opening in the film chamber and secures it firmly against the camera case. The eccentric is released by turning the chamber locking lever.



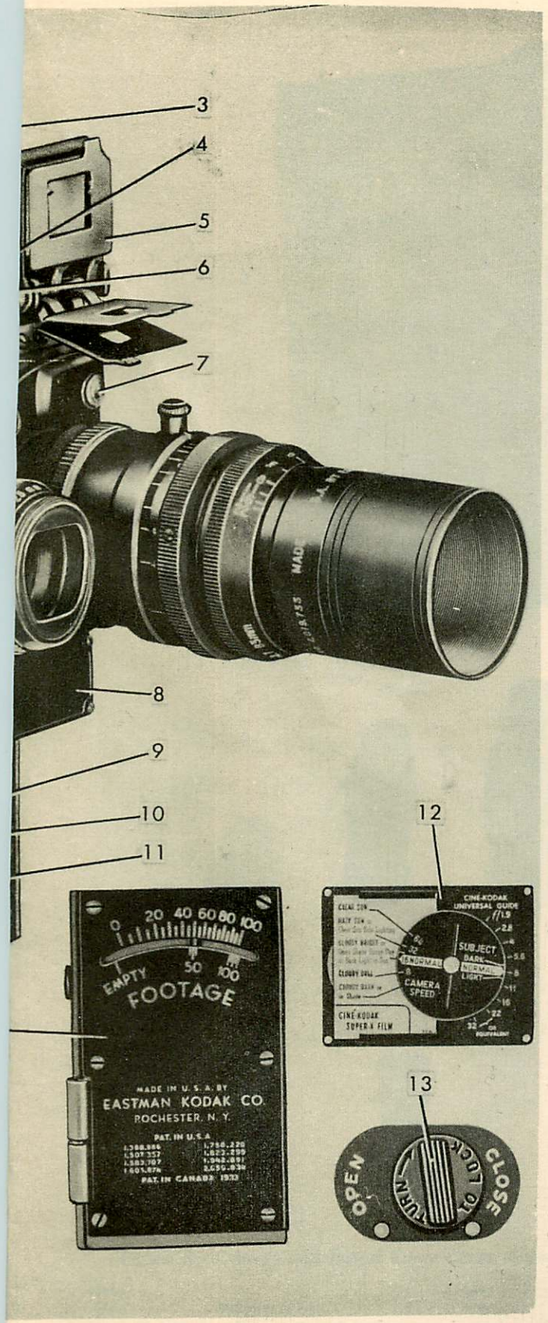


Figure 2—Ciné-Kodak Special, Side View

Index No.	Nomenclature
1	Finder Eyelet Complete
2	Handle—Carry
3	Mask—Blind
4	Finder—Reflex lens
5	Mask—Hinged
6	Button—Finder cover
7	Lock—Lens adapter
8	Lens Turret Assembly
9	Button—Starting
10	Button—Aperture slide
11	100-Foot Film Chamber Complete
12	Guide—Universal exposure
13	Knob—Cover latch
14	Plate—Chamber footage
15	Shaft—Single-frame
16	Crank—Small
17	Lever—Chamber locking
18	Lever—Single picture
19	Shaft—Eight-frame
20	Knob—Crank release
21	Lever—Shutter operating
22	Crank—Large winding
23	Dial—Speed indicator
24	Window—Frame counter
25	Dial—Footage indicator

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it Lens,

g Case

Figure 3—Camera and Tripod Carry Cases, Accessory Lenses, Lens Adapters, Adapter Rings, Filters and Mask Set

Index No.	Nomenclature
1	Ciné-Kodak Tripod Carrying Case
2	Mask Set
3	Kodak Adapter Ring, Series VI
4	Kodak CK-3 Filter, Series VI
5	Kodak CK-3 Filter in W Mount
6	Lens Adapter, 15-mm Lens
7	Lens Adapter, 63- and 152-mm Lenses
8	Ciné-Kodak *f*/2.7 Anastigmat Lens, 15-mm
9	Ciné-Kodak *f*/2.7 Anastigmat Lens, 63-mm
10	Ciné-Kodak *f*/4.5 Anastigmat Lens, 152-mm
11	Ciné-Kodak Special Carrying Case

p. TRIPOD BUSHING.—A tripod bushing in the bottom of the case furnishes a means of attaching the camera to a tripod.

q. 100-FOOT FILM CHAMBER.

(1) GENERAL.—The 100-foot film chamber (11) is a black-finish, rectangular box approximately 8 by 5 by 1½ inches. It contains the film drive mechanism and attaches to the side of the camera mechanism.

(2) UNIVERSAL EXPOSURE GUIDE.—The universal exposure guide (12) is attached to the door of the film chamber. This guide enables the camera operator to select the correct lens opening for any camera speed under varying light conditions. The card in the holder can be changed for the type of film being used. A card is furnished with each roll of film.

(3) COVER LOCKING KNOB.—Also located on the film chamber cover, the cover lock knob (13) operates the locking slide which secures the cover to the chamber. The knob slides up to hold the cover closed and locks in this position when the knob is rotated one-half turn.

(4) FOOTAGE INDICATOR PLATE.—The footage indicator plate (14) is located on the rear of the film chamber. It is a black-finish, metal plate inscribed with a scale marked off in 5-foot divisions from "EMPTY" to "100." The indicating lever is read through a slot in the plate and designates the number of feet of unexposed film.

(5) FINDER EYELET COMPLETE.—The finder eyelet complete (1) is a hinged sight mounted on the top of the film chamber. The finder eyelet, and the finder lens, which is mounted on the lens adapter, together comprise the eye-level finder. When not in use the finder eyelet is folded down flat on the top of the chamber.

(6) APERTURE SLIDE.—Located on the front of the chamber is the button (10) which operates the aperture slide. The aperture slide is a thin metal strip which closes the film opening in the chamber when the button is pushed up to the "CLOSED" position. The slide is held in position by a notched spring which operates on the extended end of the button. It is used to keep the film from being exposed or light-struck when chambers are changed.

(7) MASK SLOT AND MASKS.—The mask slot is an opening in the front of the chamber case provided to receive the masks used for making double or multiple exposures. A blind mask (3) is inserted in the slot to prevent light leak when the special masks are not in use. A set of six masks (2, figure 3), packed in a leather case, are furnished with each camera. The masks supplied are two vertical and two horizontal matched half masks for the making of double exposures, a circle mask, and an oval mask. When in use, they are held by the tension of a humped copper spring which is located at the top of the chamber beneath the front plate.

r. LENSES. (See figure 3.)

(1) 25-MM LENS.—The 25-mm lens is an *f*/1.9 anastigmat lens permanently mounted in a lens adapter. Angle of view: 21.5 by 16.2 degrees. Focusing range: Two feet to Infinity. Attachment size: W Mount or $1\frac{1}{16}$-inch, 27-mm, Series V attachments.

(2) 15-MM LENS.—The 15-mm lens (8) is an *f*/2.7 anastigmat wide-angle lens and includes a greater picture area from a given position than any other Ciné-Kodak lens. It is a black-finish lens which can be mounted in a special lens adapter for rapid attachment to the lens turret. Angle of view: 34.0 by 25.7 degrees. Focusing range: Six inches to Infinity. Attachment size: $1\frac{9}{16}$-inch, 39.5-mm, Series VI attachments.

(3) 63-MM LENS.—The 63-mm lens (9) is an *f*/2.7 anastigmat lens mounted in a black-finish metal lens barrel. Both the 63- and 152-mm lenses can be attached to the camera with the same lens adapter. Angle of view: 8.7 by 6.5 degrees. Focusing range: One and one-half feet to Infinity. Attachment size: $1\frac{5}{16}$-inch, 33-mm, Series VI attachments.

(4) 152-MM LENS.—The 152-mm lens (10) is an *f*/4.5 anastigmat lens also mounted in a black-finish metal lens barrel. Angle of view: 3.6 by 2.7 degrees. Focusing range: Ten feet to Infinity. Attachment size: $1\frac{9}{16}$-inch, 39.5-mm, Series VI attachments.

s. LENS ADAPTERS. (See figure 3.)—The 25-mm lens is supplied permanently mounted in a lens adapter. The lens adapter (6) for the 15-mm *f*/2.7 lens is of black finish and can be used only with this lens. A third lens adapter (7) is supplied for use with the long focus lenses. Each adapter has a hinged framing mask which is used in conjunction with the finder eyelet on the film chamber. The lens adapters attach to the camera studs by a simple locking plate.

t. ADAPTER RINGS AND FILTERS. (See figure 3.)

(1) The Kodak adapter rings are made of black-finish metal and attach to the lens by means of spring fingers which firmly grip the lens mount. The insert of the adapter ring retains the filter in position. A Series VI, adapter ring (3) is supplied for attaching filters to the accessory lenses.

(2) The Kodak CK-3 filter, Series VI (4) is a round gelatin filter mounted between glass with a metal band protecting the edges of the glass. All Series

VI filters will fit all Series VI adapter rings. The filter for the 25-mm lens is mounted in a W Mount (5). When in use it replaces the lens hood of the 25-mm lens.

u. CINÉ-KODAK CARRYING CASE. (See figure 3.)

(1) The Ciné-Kodak carrying case (11) is a black suitcase type case divided into separate compartments to accommodate the camera and accessories.

(2) The carrying case is 14 by 12 by 8 inches in size and has space for the camera with 100-foot film chamber attached, an extra 100-foot film chamber, four accessory lenses and lens adapter, light meter, filters, and three 100-foot spools of film.

v. CINÉ-KODAK TRIPOD. (See figure 1.)

(1) The Ciné-Kodak tripod is an all-metal tripod designed expressly for use with the Ciné-Kodak Special.

(2) The extension legs have a maximum length of 4 feet 10 inches; a minimum of 2 feet 9½ inches.

(3) A handle attaches to the tripod head to facilitate smooth panning or tilting. The head will lock in any desired position.

w. CINÉ-KODAK TRIPOD CARRYING CASE. (See figure 3.)

(1) The tripod carrying case (1) is constructed of heavy green canvas reinforced with black leather. A hinged leather cover and half-length zipper make it possible to insert the tripod without difficulty. The case has a double, leather handle.

(2) The outside dimensions are approximately 35 inches long by 5½ inches in diameter.

SECTION III
PREPARATION FOR USE

1. GENERAL.

The Ciné-Kodak Special and component parts are shipped together in one waterproof carton. Each item is separately packed in its individual box and all boxes are plainly labeled. Do not remove the filters, lens adapters, and adapter rings from the individual boxes.

2. CLEANING LENSES.

Remove the 25-mm lens unit from the camera by pushing up and to the left on the lock (2, figure 4) so that the plate will be at an angle. Take off the lens hood by inserting the tip of the thumb in the opening and pulling toward the front. Clean both exposed surfaces of the lens with lens cleaning paper or a soft cloth. Replace the lens hood and attach the lens unit to the camera. Clean all lenses in a similar manner before attaching them to the camera. For details on cleaning lenses refer to section V, paragraph 2. a.

SECTION IV
OPERATION

1. PRINCIPLES OF OPERATION.

a. A motion picture camera records a series of pictures taken in such rapid succession that only a slight difference is discernible between adjacent pictures. When these individual pictures are projected on the screen in continuous succession, the changes from one picture to the next are so rapid that the eye retains the image during the interval between pictures. As a result, one picture blends with the next picture to give the illusion of motion.

b. The lens opening of the camera is covered by the camera shutter during the time the film is moved by the film chamber mechanism. The exposure is made during the instant (approximately 1/50 second at speed 24) when the individual frame remains stationary before the lens opening. These individual frames can be exposed at speeds of from 8 to 64 frames per second which, if projected at the normal speed of 16 frames per second, will give the illusion of fast, normal, or slow action.

2. OPERATION INSTRUCTIONS.

NOTE

It is advisable to become completely familiar with the operation of the Ciné-Kodak Special before taking pictures. Practice the various means of operating the camera, pretend you are taking pictures, and make all the necessary adjustments. Do not load the film chambers until this period of practice has been completed.

a. SELECTING LENSES FOR USE.—Two factors determine the size of an image recorded on film by a lens. One is the distance between the camera and the subject being filmed; the other is the focal length of the lens used. When it is not possible to increase the camera-to-subject distance to include all of a wanted area when using the 25-mm *f*/1.9 lens, use the 15-mm *f*/2.7 wide-angle lens. If it is impossible or impractical to get as close as desired to a distant subject or to very small subjects with the 25-mm *f*/1.9 lens, use one of the long-focus lenses. For steady screen results with long-focus lenses, the camera *must* be mounted on a tripod or other solid support. For the field sizes of the lenses see Table No. 1.

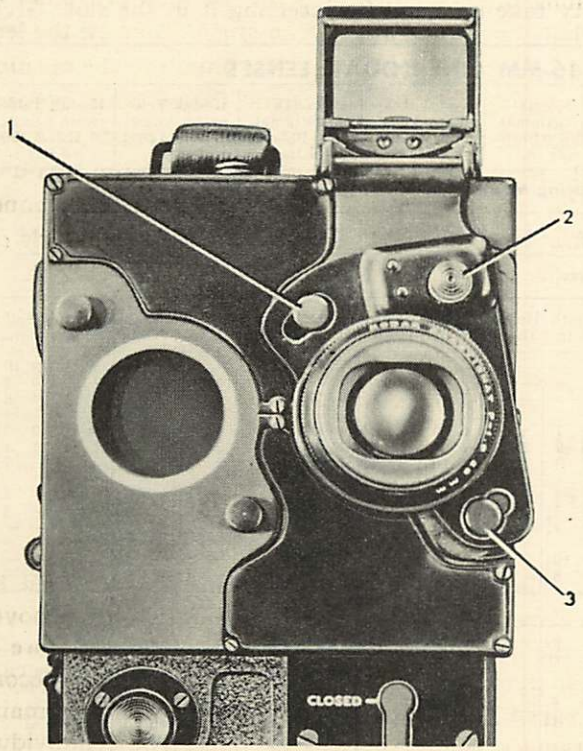


Figure 4—Attaching Lens Mount to Camera

Index No.	Nomenclature	Index No.	Nomenclature
1	Stud—Locating	3	Stud—Locating
2	Lock—Lens adapter		

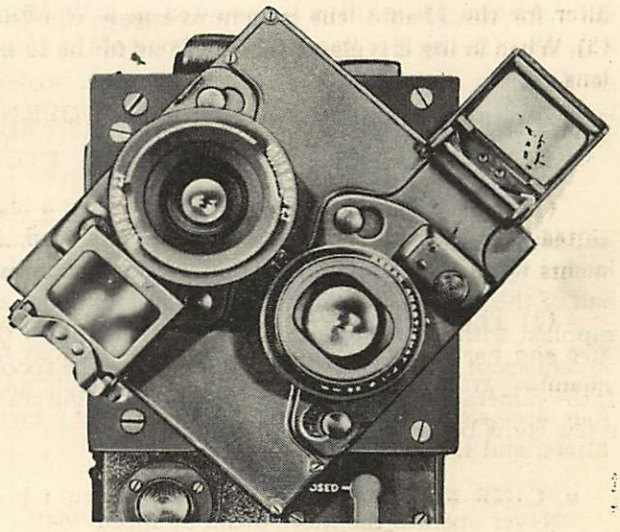


Figure 5—Adjusting Lens Turret

b. ATTACHING LENSES.

(1) After the lenses have been selected, place the lens with its proper adapter over the lens socket in the turret, with the two holes in the adapter plate over the locating studs (1 and 3, figure 4). Press the plate firmly against the turret and turn it to a vertical position. Make sure that the lock snaps into place.

(2) To attach a second lens to the turret, remove the lens hole cap and secure the lens as above.

(3) To revolve the turret, grasp either of the lenses or the turret itself and rotate (figure 5) until the desired lens is on the film chamber side of the camera. The turret must snap into place.

NOTE

The 25-mm lens can be used in combination with the 15-mm or 63-mm lens. However, when the adapter ring is used on the 63-mm, it must be removed when the 25-mm lens is in the filming position. The 15-mm *f*/2.7 lens can be used in combination with the 25-mm lens. The 152-mm *f*/4.5 lens can not be used in combination with any of the lenses.

c. REMOVING AND ATTACHING FILM CHAMBERS. (See figure 6.)

(1) REMOVING.—Be sure the starting button is out. Then push the aperture slide button (10, figure 2) to "CLOSED" to avoid exposing the frame of film positioned in the aperture and to lock the camera mechanism. *Do not attempt to remove the film chamber with the aperture slide button at* "OPEN." Raise the chamber locking lever (1, figure 6) until it snaps out. Swing the film chamber down (2) to release it from the mechanism.

(2) ATTACHING.—Place the film chamber on the mechanism half of the camera to engage the drive couplings. Swing the chamber up (3) as far as it will go. Push in and down (4) on the chamber locking lever. Return the aperture slide button to "OPEN."

d. LOADING AND UNLOADING FILM CHAMBERS.

(1) GENERAL.—The film chambers can be loaded when they are either on or off the mechanism half of the camera. A 100-foot and a 50-foot spool are supplied with the 100-foot chamber. The film on the 50-foot spool is for practice threading. Save the spools. If the camera is run down, give the large winding crank a few turns before starting operations.

CAUTION

Never operate the mechanism at speed "64" without film in the chamber.

(2) LOADING 100-FOOT FILM CHAMBER. (See figure 7.)—Rotate the cover latch knob a half turn to the left and push down. Insert the fingernail in the notch at the front edge of the film chamber and open the door. Push the brake lever (5) down and remove the film spool. Open the sprocket clamp by pushing *in* and *down* on the clamp release (6). Unroll about 2 feet of film from a new spool and place the spool, *square hole down* on the supply spindle.

NOTE

Load the chamber in subdued light.

(a) Thread the film between the sprocket and the sprocket clamp at (1) and up between the film guides at (2). Make sure to engage the film perforations on the sprocket teeth. Leave a free loop of film, as indicated by the arrow guide on the chamber.

(b) Pull the pressure pad (4) back as far as it will go. (If the film chamber is not attached to the camera, rotate the sprocket until the pull-down claw is withdrawn from the gate.)

(c) Place the film over the guide roller (3), beneath the pressure pad and into the film channel of the gate. Make sure that the notch in the pressure pad is properly fitted over the locating pin on the aperture plate.

(d) Follow the curved film gate and thread the film under the guide stud. Permit the film to loop as shown and insert it between the sprocket clamp and the sprocket at (1). Fit the perforations over the sprocket teeth *which already engage the film coming from the supply spool.*

(e) Close the sprocket clamp by pushing upward until a click is heard.

(f) Attach the end of the film to the core of the empty take-up spool by inserting it in the slot. Give

TABLE No. 1—TABLE OF FIELD SIZES FOR 16-MM CINÉ-KODAK LENSES

Name	Kodak Anastigmat *f*/3.5, 20 mm. (13/16 in.)	Kodak Anastigmat *f*/2.7, 15 mm. (⅝ in.)	Kodak Anastigmat *f*/1.9, 25 mm. (1 in.)	Kodak Anastigmat *f*/1.6, 50 mm. (2 in.)	Kodak Anastigmat *f*/3.5, 50 mm. (2 in.)	Kodak Anastigmat *f*/2.7, 63 mm. (2½ in.)	Kodak Telephoto Anast. *f*/4.5, 76 mm. (3 in.)	Kodak Anastigmat *f*/2.7, 102 mm. (4 in.)	Kodak Telephoto Anast. *f*/4.5, 114 mm. (4½ in.)	Kodak Telephoto Anast. *f*/4.5, 152 mm. (6 in.)
	Fixed Focus	**Focusing Mount**								
Angular Field at Inf.	26.5° x 20.0°	34.0° x 25.7°	21.5° x 16.2°	10.8° x 8.1°	10.9° x 8.1°	8.7° x 6.5°	7.2° x 5.4°	5.4° x 4.1°	4.8° x 3.6°	3.6° x 2.7°
	Field Size									

Distance* to subject	Width ft. in.	Height ft. in.	Width ft. in.	Height ft. in.	Width ft. in.	Height ft. in.	Width ft. in.	Height ft. in.	Width ft. in.	Height ft. in.	Width ft. in.	Height ft. in.	Width ft. in.	Height ft. in.	Width ft. in.	Height ft. in.	Width ft. in.	Height ft. in.	Width ft. in.	Height ft. in.	Width ft. in.	Height ft. in.
400 feet	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	25 3	18 10
200 feet	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	19 —	14 2	16 10	12 7	12 7	9 5
100 feet	— —	— —	— —	— —	19 —	14 2	19 —	14 2	— —	— —	— —	— —	12 7	9 5	9 5½	7 1	8 4½	6 3	6 3	4 8		
50 feet	23 6	17 7	— —	— —	19 —	14 2	9 5½	7 1	9 5½	7 1	7 7	5 8	6 3½	4 8	4 8½	3 6	4 2	3 1	3 1	2 3¾		
25 feet	11 9	8 9½	— —	— —	9 5½	7 1	4 8½	3 6½	4 8½	3 6½	3 9	2 10	3 1	2 3¾	2 4	1 9	2 3	1 6½	1 6	1 1½		
15 feet	7 ½	5 3½	9 2	6 10	5 8	4 3	2 10	2 1½	2 9¾	2 1½	2 3	1 8½	1 10	1 4½	1 4½	1 ⅛	1 2½	— 10½	— 10½	— 7⅞		
12 feet	— —	— —	— —	— —	— —	— —	2 3	1 8	— —	— —	— —	— —	1 5½	1 1	1 1¼	— 9¾	— 11¼	— 8½	— 8½	— 6½		
10 feet	4 8½	3 6	— —	— —	3 9	2 9¾	1 10½	1 5	1 10½	1 4⅜	1 5¾	1 1¼	1 2½	— 10⅜	— 10¼	— 8¼	— 9¼	— 6¾	— 6¾	— 5		
8 feet	3 9	2 9¾	4 10½	3 7½	3 —	2 3	1 6	1 1½	1 5¾	1 1¼	1 2¼	— 10⅜	— 11⅜	— 8½	— 8⅜	— 6½	— 7¼	— 5⅜	— —	— —		
6 feet	2 9¾	2 1¼	3 8	2 8¼	2 3	1 8	1 1¼	— 10⅛	1 1¼	— 9¾	— 10½	— 7⅞	— 8¼	— 6¼	— 6⅜	— 4¾	— 5¼	— 3¾	— —	— —		
5 feet	— —	— —	3 ½	2 3¼	— —	— —	— 11¼	— 8⅜	— 10⅞	— 8¼	— 8¾	— 6½	— 6¾	— 5	— 5⅛	— 3¾	— 4⅛	— 3¼	— —	— —		
4½ feet	— —	— —	— —	— —	— —	— —	— 10¼	— 7½	— 9¾	— 7¼	— —	— —	— 6	— 4½	— 4⅜	— 3½	— —	— —	— —	— —		
4¼ feet	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— 3⅜	— 2½	— —	— —
4 feet	1 10½	1 4¾	2 5¼	1 9¾	1 5¾	1 1¼	— 9	— 6¾	— 8⅜	— 6½	— 6⅞	— 5⅛	— 5¼	— 3⅞	— —	— —	— —	— —	— —	— —		
3¾ feet	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— 4⅛	— 3⅜	— —	— —	— —	— —	— —	— —		
3½ feet	— —	— —	— —	— —	— —	— —	— 7⅞	— 5⅞	— 7½	— 5⅝	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —		
3 feet	1 5	1 ¾	1 9¾	1 4¼	1 1¼	— 9¾	— 6¾	— 5	— 6⅞	— 4¾	— 5	— 3¾	— —	— —	— —	— —	— —	— —	— —	— —		
2½ feet	— —	— —	1 6	1 1¾	— —	— —	— 5¼	— 4⅛	— 5¼	— 3⅞	— 4⅛	— 3	— —	— —	— —	— —	— —	— —	— —	— —		
2¼ feet	— —	— —	— —	— —	— —	— —	— —	— —	— 4⅜	— 3½	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —		
2 feet	— —	— —	1 2½	— 10¾	— 8¾	— 6½	— 4¾	— 3⅜	— —	— —	— 3⅛	— 2⅜	— —	— —	— —	— —	— —	— —	— —	— —		
1½ feet	— —	— —	— 10¾	— 8	— —	— —	— —	— —	— —	— —	— 2¼	— 1⅝	— —	— —	— —	— —	— —	— —	— —	— —		
1¼ feet	— —	— —	— 9	— 6¾	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —		
1 foot	— —	— —	— 7⅛	— 5⅜	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —		

Field Size—distance settings less than 1 ft. Kodak Anastigmat *f*/2.7, 15 mm. (⅝ in.)

Distance* to subject	Width ft.	Width in.	Height ft.	Height in.
10 inches	—	5¾	—	4¼
9 inches	—	5¼	—	3¾
8 inches	—	4½	—	3¼
7 inches	—	4	—	3
6 inches	—	3⅝	—	2⅝

*Distances measured from front of camera for all lenses except *f*/1.6, 50 mm. lens, for which they are measured from the engraved focusing line on the lens barrel.

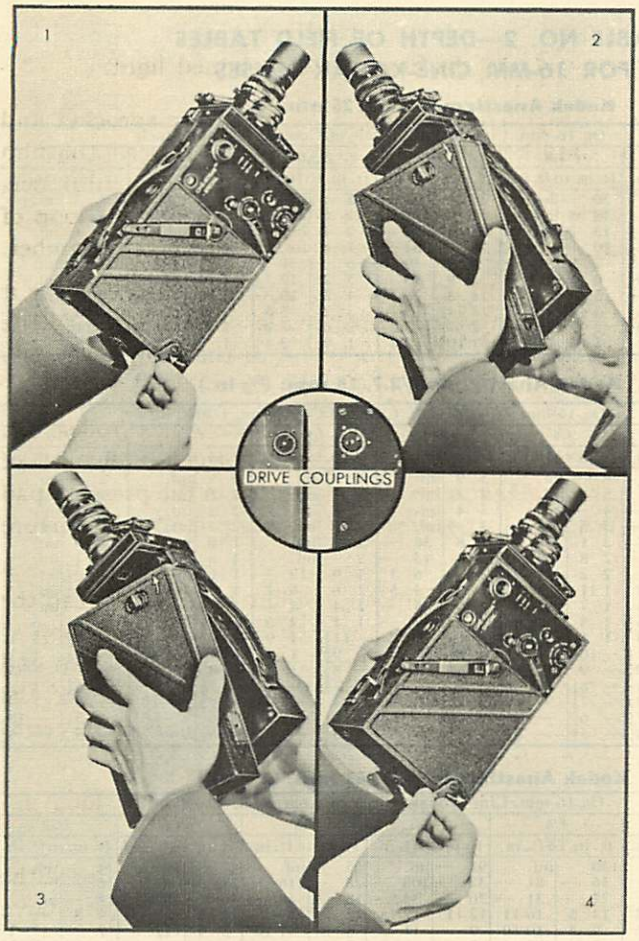


Figure 6—Attaching and Removing 100-Foot Film Chamber

the spool a few turns to make sure the film is securely attached.

(g) Place the empty spool, *square hole down,* on the take-up spindle. Release the brake lever (5) by pressing in on the lug near the hinge.

(h) Push the aperture slide button to "OPEN." Run the camera a second or two to see that the film runs smoothly in its path and that the loops are maintained. If the upper loop increases, pull the film down until the loop size is correct. Repeat the trial run.

NOTE

If the film chamber is not on the camera, give the trial run described above by turning the sprocket knob clockwise.

(i) Close the film chamber door. If it does not close easily, the sprocket clamp is not fully closed or the spools are not seated properly. Push the door lock to "CLOSE" and give it a half turn to the right.

(j) Remove the lens from the picture-taking position. Set the shutter lever at "OPEN" and set the speed dial at "16." *Do not set it at any speed faster than* "16."

(k) Look directly into the picture aperture; press the starting button to start the camera. When the perforations at the end of the film leader appear in the picture aperture, stop the camera. Replace the lens.

(l) Set the camera footage indicator dial (25, figure 2) at "0" for both the 50- and 100-foot rolls of film.

(3) UNLOADING FILM CHAMBERS.

(a) When the chamber footage indicator (14, figure 2) points to "0," the usable length of film has been exposed. Run the camera until the chamber footage dial shows "EMPTY." The end of the film can usually be heard as it passes through the gate.

(b) Unload the chamber only in subdued light or in the shade of the body. Open the film chamber door, pull down the brake lever, and remove the full spool from the take-up spindle.

d. TO WIND THE CAMERA MOTOR.

(1) Make sure that the starting button is out. Bring the large winding crank down from the side of the camera and turn the crank counterclockwise (the direction of the arrow) until the motor spring is wound tight.

(2) A warning bell sounds when the camera is nearly wound (about three turns before the stop is reached). Turn the crank *very slowly* after the bell rings. The crank will reach a definite stop approximately three turns after the warning bell sounds.

CAUTION

Do not force the crank against this stop.

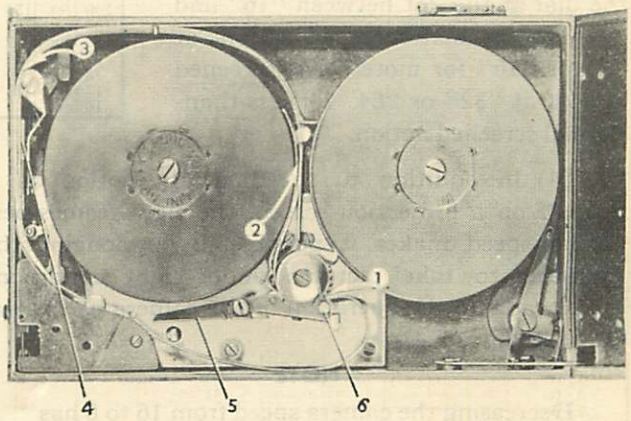


Figure 7—Loading 100-Foot Film Chamber

Index No.	Nomenclature	Index No.	Nomenclature
1, 2, 3	Indicating Threading Sequence	4	Pad—Pressure
		5	Lever—Brake
		6	Release—Sprocket clamp

(3) The warning bell also sounds when the motor is nearly run down. About three feet of film, approximately seven seconds of filming time at normal (16) speed, can be exposed after the bell rings. About 38 feet of film can be exposed with the camera motor wound tight.

e. TO SET SPEED INDICATOR DIAL.

(1) The Ciné-Kodak Special can be set to take pictures at speeds ranging from 8 to 64 frames per second. To set the speed indicator dial (23, figure 2), rotate it until the large white dot on the dial is opposite the desired speed number, or between two speed numbers if the camera is to be operated at speeds other than 8, 16, 32, or 64 frames per second. To operate the camera at 24 frames per second, set the white dot at the mark between the numbers 16 and 32.

(2) For normal screened action, when the film is to be projected in a silent projector at 16 frames per second, set the dial at "16." Set it at "8" for faster-than-normal silent screened action; at "24," "32," "64," or between these numbers, for less-than-normal screened action.

(3) If sound is to be "dubbed-in" or for any other reason the pictures are to be shown in a sound projector at a speed of 24 frames per second, set the dial at the dot between "16" and "32" for normal screened action, at "8" or "16" for more rapid screened action, at "32" or "64" for less-than-normal screened action.

TABLE NO. 2—DEPTH OF FIELD TABLES FOR 16-MM CINÉ-KODAK LENSES

Depth of Field: Kodak Anastigmat f/1.9, 25 mm. (1 in.)

Distance Focused On	On 16-mm. Ciné-Kodak. Circle of Confusion, 1/1000 inch																							
	f/1.9			f/2.8			f/4			f/5.6			f/8			f/16								
	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.
INF.	44	—	inf.		30	—	inf.		21	—	inf.		15	—	inf.		10	6	inf.		5	3	inf.	
50 feet	23	—	inf.		18	8	inf.		15	—	inf.		11	6	inf.		8	7	inf.		4	9	inf.	
25 feet	16	—	58	—	13	7	155	—	11	4	inf.		9	4	inf.		7	5	inf.		4	4	inf.	
15 feet	11	2	23	—	10	—	30	—	8	9	54	—	7	6	inf.		6	2	inf.		3	11	inf.	
10 feet	8	2	13	—	7	6	15	—	6	9	19	—	6	—	30	—	5	1	240		3	5	inf.	
8 feet	6	9	9	9	6	4	11	—	5	9	13	—	5	2	17	3	4	6	34	—	3	2	inf.	
6 feet	5	3	7	—	5	—	7	6	4	8	8	5	4	3	10	—	3	10	14	—	2	9	inf.	
4 feet	3	8	4	5	3	6	4	7	3	4	5	—	3	2	5	6	2	11	6	6	2	3	17	—
3 feet	2	10	3	3	2	9	3	4	2	7	3	6	2	6	3	9	2	4	4	2	1	11	7	—
2 feet	1	11	2	1	1	10	2	2	1	10	2	2	1	9	2	4	1	8	2	6	1	5	3	3

Depth of Field: Kodak Anastigmat f/2.7, 15 mm. (5/8 in.)

Distance Focused On	On 16-mm. Ciné-Kodak. Circle of Confusion, 1/1000 inch																							
	f/2.7			f/4			f/5.6			f/8			f/11			f/16								
	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.
INF.	12	—	inf.		8	—	inf.		5	9	inf.		4	—	inf.		3	—	inf.		2	—	inf.	
15 feet	6	8	inf.		5	3	inf.		4	2	inf.		3	2	inf.		2	5	inf.		1	9	inf.	
8 feet	4	10	24	—	4	—	inf.		3	4	inf.		2	8	inf.		2	2	inf.		1	7	inf.	
6 feet	4	—	12	—	3	5	23	—	3	—	inf.		2	5	inf.		2	—	inf.		1	6	inf.	
5 feet	3	7	8	7	3	1	13	—	2	8	38	—	2	3	inf.		1	10	inf.		1	5	inf.	
4 feet	3	—	6	—	2	8	8	—	2	4	13	—	2	—	inf.		1	8	inf.		1	4	inf.	
3 feet	2	5	4	—	2	2	4	9	2	—	6	3	1	9	12	—	1	6	inf.		1	2½	inf.	
2½ feet	2	1	3	2	1	11	3	7	1	9	4	5	1	6	6	7	1	4	17	—	1	1½	inf.	
2 feet	1	9	2	5	1	7	2	8	1	6	3	—	1	4	4	—	1	2	6	4	1	—	inf.	
1½ feet	1	4	1	8	1	3	1	10	1	2	2	—	1	1	2	5	1	—	3	1	—	10½	6	—
1¼ feet	1	1½	1	5	1	1	1	6	1	—	1	7	—	11½	1	9	—	10½	2	2	—	9¼	3	1
1 foot	—	11	1	1	—	10¾	1	1¼	—	10¼	1	2	—	9¾	1	4	—	9	1	6	—	8¼	1	11
10 in.	—	9½	—	10¾	—	9	—	11	—	8¾	—	11¾	—	8½	1	—	—	8	1	2	—	7	1	5
9 in.	—	8½	—	9½	—	8¼	—	9¾	—	8	—	10¼	—	7¾	—	11	—	7¼	1	—	—	6¾	1	2
8 in.	—	7½	—	8½	—	7½	—	8¼	—	7¼	—	9	—	7	—	9½	—	6¾	—	10	—	6	1	—
7 in.	—	6½	—	7½	—	6½	—	7¾	—	6½	—	7¾	—	6¼	—	8	—	6	—	8½	—	5½	—	10
6 in.	—	5¾	—	6½	—	5¾	—	6¼	—	5½	—	6½	—	5½	—	6½	—	5¼	—	7	—	5	—	7¾

Depth of Field: Kodak Anastigmat f/2.7, 63 mm. (2½ in.)

Distance Focused On	On 16-mm. Ciné-Kodak. Circle of Confusion, 1/1000 inch																							
	f/2.7			f/4			f/5.6			f/8			f/11			f/22								
	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.
INF.	193	—	inf.		130	—	inf.		93	—	inf.		65	—	inf.		47	—	inf.		24	—	inf.	
50 feet	40	—	67	—	36	—	81	—	32	—	108	—	28	—	216	—	24	—	inf.		16	—	inf.	
25 feet	22	—	29	—	21	—	31	—	20	—	34	—	18	—	40	—	16	—	52	—	12	—	inf.	
15 feet	14	—	16	2	13	5	16	11	12	11	17	11	12	2	19	5	11	5	22	—	9	3	41	—
10 feet	9	6	10	6	9	4	10	10	9	—	11	3	8	8	11	10	8	4	12	8	7	—	17	4
8 feet	7	8	8	4	7	6	8	6	7	5	8	8	7	1	9	1	6	11	9	7	6	—	12	—
6 feet	5	9	6	3	5	9	6	4	5	7	6	5	5	6	6	7	5	4	6	10	4	10	8	—
5 feet	4	11	5	1	4	10	5	2	4	9	5	3	4	8	5	5	4	7	5	6	4	2	6	4
4 feet	3	11	4	1	3	11	4	1	3	10	4	2	3	10	4	3	3	8	4	4	3	6	4	10
3 feet	2	11½	3	½	2	11½	3	¾	2	11	3	1¼	2	10½	3	1½	2	10	3	2¼	2	8½	3	5
2½ feet	2	5½	2	6½	2	5½	2	6½	2	5¼	2	6¾	2	5	2	7	2	4½	2	7½	2	3¼	2	9¼
2 feet	1	11¾	2	¼	1	11¾	2	¼	1	11½	2	¼	1	11½	2	¾	1	11½	2	1	1	10¼	2	2
1½ feet	1	5¾	1	6¼	1	5¾	1	6¼	1	5¾	1	6¼	1	5⅝	1	6¾	1	5½	1	6¼	1	5	1	7

Depth of Field: Kodak Anastigmat f/4.5, 152 mm. (6 in.)

Distance Focused On	On 16-mm. Ciné-Kodak. Circle of Confusion, 1/1000 inch																							
	f/4.5			f/5.6			f/8			f/11			f/16			f/22								
	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.	ft.	in.	to ft.	in.
INF.	670	—	inf.		540	—	inf.		375	—	inf.		275	—	inf.		190	—	inf.		137	—	inf.	
400 feet	250	—	1000	—	230	—	1580	—	195	—	inf.		163	—	inf.		128	—	inf.		102	—	inf.	
200 feet	154	—	285	—	146	—	320	—	130	—	425	—	116	—	750	—	97	—	inf.		82	—	inf.	
100 feet	87	—	117	—	84	—	123	—	79	—	135	—	73	—	157	—	65	—	212	—	58	—	370	—
50 feet	47	—	54	—	46	—	55	—	44	—	57	—	42	—	61	—	40	—	67	—	37	—	78	—
25 feet	24	3	25	11	24	—	26	2	23	6	26	8	23	—	27	4	22	3	28	8	21	4	30	—
15 feet	14	8	15	4	14	7	15	5	14	5	15	7	14	3	15	9	14	—	16	2	13	7	16	8
12 feet	11	9	12	3	11	9	12	3	11	8	12	4	11	6	12	6	11	4	12	8	11	—	13	—
10 feet	9	10	10	2	9	10	10	2	9	9	10	3	9	8	10	4	9	6	10	6	9	5	10	7

(4) In addition to speeding up motion as it appears on a projection screen, the eight-frames-per-second speed makes it possible, by prolonging the exposure, to take pictures under light conditions unfavorable to the operation of the camera at normal (16) speed.

NOTE

Decreasing the camera speed from 16 to 8 has the same effect as increasing the size of the lens opening one stop.

f. TO FOCUS.

(1) Turn the focusing collar of the lens until the figure representing the camera-to-subject distance in feet is opposite the index line on the lens.

(2) Focusing the lens at a given distance does not mean that only objects at this distance will be sharp, for objects somewhat nearer and farther will also be in good focus, and the smaller the lens opening, the greater will be the range of sharpness. See Table No. 2 for depth of field for each lens.

(3) When the standard 25-mm f/1.9 lens is used, the Ciné-Kodak Special may be used as a fixed focus camera with lens openings of f/5.6 or smaller, if the focus is set at 15 feet. With these settings, all objects from about 7½ feet to Infinity will be in sharp focus.

(4) For close work, use the reflex finder to focus the lens or measure the distance with a rule from the front edge of the film chamber to the subject.

g. TO DETERMINE EXPOSURE. (See figure 8.)

(1) The universal guide fitted with the light-condition card packed with each roll of Ciné-Kodak Film, indicates the lens opening for photographing subjects outdoors, or indoors at various camera speeds.

(2) Insert the exposure card in the guide, proper side up, and set the guide dial for the camera speed to be used. Read the lens opening as indicated by the arrow on the right side of the dial, then set the diaphragm collar on the lens. Be sure the shutter operating lever is set at "OPEN."

(3) Example: With the film chamber loaded with Ciné-Kodak Super-X Film, pictures to be made at normal (16) speed in a clear sun, set the camera speed arrow on the guide dial (marked "16 NORMAL") at "CLEAR SUN." The "SUBJECT" arrow of the dial shows *f*/16 to be the lens opening for a "NORMAL" subject; between *f*/16 and *f*/22 for a "LIGHT" subject; between *f*/11 and *f*/16 for a "DARK" subject.

h. FINDER CORRECTION FOR "CLOSE-UPS."

(1) Because the eye-level finder and lens are separated, they cannot see exactly the same view at all distances. This error, which is called parallax, is especially noticeable in close-ups.

(2) To correct this condition of parallax, lines and pointers have been placed in the finder lenses of the lens adapters. For example, when the 25-mm *f*/1.9 lens is used, the two lines marked "2 Ft." and "6 Ft." indicate the top limit of the picture area for subjects filmed at 2 or 6 feet from the camera. The

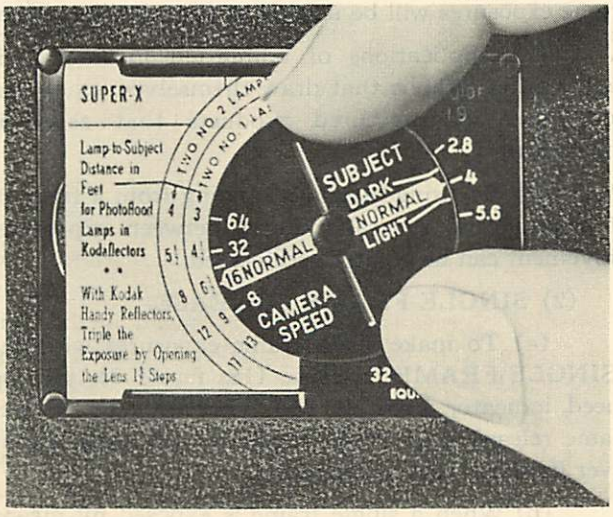


Figure 8—Universal Exposure Guide

LEFT—Subject framed correctly in the eye-level finder and sight for a 2-foot close-up.
CENTER—Subject framed in the reflex finder for a 2-foot close-up.
RIGHT—Correctly framed subject as it appears on the film and on the projection screen.

Figure 9—Framing Subject in Finders

first picture of figure 9 shows a subject correctly framed in the eye-level finder for a 2-foot close-up and the last picture shows how that subject will appear on the projection screen.

(3) Similar lines are inscribed on the finder of the 15-mm adapter. Pointers and distances are indicated on the masks for the 63- and 152-mm lenses.

i. REFLEX FINDER. (See figure 10.)

(1) Use the reflex finder for exacting work and for extreme close-ups. It is free of parallax and shows the same field and subject sharpness (center picture, figure 9) as will be recorded on the film.

(2) Push the finder cover button away from the finder. Set the lens at its largest opening to allow the maximum of light to enter.

(3) Compose the subject carefully. Watch the image in the finder and turn the focusing collar back and forth. Stop at the point which gives the sharpest image on the ground glass. Set the lens at the opening required for making the exposure.

(4) Do not try to close the finder with the finder cover button. It will close automatically when the starting button is pressed to start the camera motor.

CAUTION

Never try to use the reflex finder while the camera is running. Do not try to hold it open when starting the camera motor.

j. TO SET CAMERA FOOTAGE INDICATOR DIAL.

(1) The camera footage indicator dial (25, figure 2) registers in *feet* the film *exposed* by the camera and must be:

(a) Set each time the camera is loaded.

(b) Reset when a film chamber is removed to run down the motor and the chamber replaced.

(c) Reset when chambers with varying amounts of film are interchanged.

(2) Note the exact reading of the footage indicator dial when a film chamber is removed. Make a

notation of this reading on the dull side of the chamber with a lead pencil. When the film chamber is again replaced on the camera, set the footage indicator dial at this figure.

(3) To reset the footage indicator dial when one film chamber is replaced with another partially used chamber, note the number of feet of unexposed film registered on the footage indicator plate (14, figure 2) of the chamber to be attached. Subtract this figure from 50 or 100 depending upon the size of the original roll of film in the chamber, to determine the number of feet of exposed film. Set the camera footage indicator dial at this number.

k. TO MAKE AN EXPOSURE.

(1) To make an exposure, push the starting button all the way in. Hold it in and up for the length of time necessary for filming the desired scene, or lock it in the running position by pushing *in* and *down*. To unlock the button, push it up, then release it.

NOTE

If the starting button is not held *up* when pushed *in*, it will have a tendency to lock itself into the continuous running position.

(2) The length of time that should be allowed for filming a scene is dependent, of course, upon the character of the subject being filmed, and the speed at which the camera is operated. Eight to ten seconds —equal to about three to four feet of film— is average with the camera set at normal (16) speed.

(3) If the starting button is pressed while the shutter operating lever is at "CLOSED," the audible shutter warning will give a buzzing alarm. Stop the exposure. Wind the unexposed film back by means of the small crank (16, figure 2) attached to the "EIGHT-FRAME" shaft. The shutter warning will also sound as the film is wound back. Then open the shutter and proceed with the exposure.

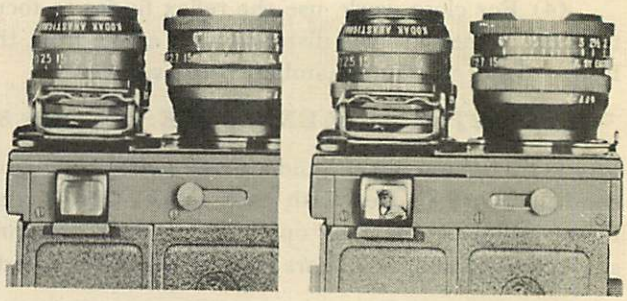
CAUTION

Whenever film is wound back (in the reverse direction) turn the crank *very slowly* and stop winding as soon as the stop device prevents further turning of the crank. Do not force the crank against the stop.

l. TO PANORAM.

(1) Whenever possible try to photograph an extended scene by taking a series of steady shots. However, it is sometimes desirable to panoram, that is, to move the camera horizontally while an exposure is being made.

(2) Start panorams with an object of lesser importance; then swing slowly to the most important



Reflex Finder Closed Reflex Finder Open

Figure 10—Using the Reflex Finder

object in the scene. Hold the camera *steadily* on the first view for a moment, panoram *s-l-o-w-l-y*, then hold it on the last view for several moments before stopping the exposure.

NOTE

Never panoram on nearby objects.

(3) When it is necessary to panoram to follow a moving object, keep the object in the center of the finder.

m. TO MAKE SINGLE-FRAME EXPOSURES.

(1) GENERAL.—Animation and speeded action are both made with single-frame exposures, the exposures themselves being made either with the "SINGLE-FRAME" release or with the small crank attached to the "ONE-FRAME" shaft.

(a) To animate a subject, expose a single frame, move the subject slightly, expose another frame, move the subject again, and so on. A definite movement to take place in one second on a projection screen with the projector operated at normal (16) speed, will require 16 single-frame exposures. If the projected movement is to take place in two seconds, 32 single-frame exposures will be needed to produce the action.

(b) Applications of animation include: Animated titles, graphs that draw themselves, machines, and other manufactured products that assemble themselves.

(c) By using intervals ranging from a fraction of a second to several minutes between exposures, movement can be greatly accelerated.

(2) SINGLE-FRAME RELEASE.

(a) To make single-frame exposures with the "SINGLE-FRAME" release (18, figure 2), set the speed indicator knob at "16." Pull out the single-frame release lever knob. Push down on the release lever knob to make an exposure.

(b) When a single frame is exposed by means of the release, the exposure of the film is equal to an exposure made with the camera operated by motor

with the speed indicator knob set at "8." In other words, the actual exposure-per-frame is twice what it would be for the camera operated by motor at normal (16) speed. A corresponding adjustment must therefore be made in the lens opening.

(c) Greatest uniformity of exposure in single-frame work is obtained by using the release only when the motor is tightly wound.

(3) SMALL CRANK ATTACHED TO ONE-FRAME SHAFT.

(a) Remove the film chamber. Note the reading on the camera footage indicator dial. Push in on the magazine locking lever (1, figure 11) to release the mechanism and hold the starting button in until the motor stops. Reset the footage indicator dial and replace the film chamber.

(b) Place the small crank on the "ONE FRAME" shaft and push down on the "CRANK RELEASE" to lock the crank on the shaft.

(c) Lock the starting button in the run position and turn the small crank in the direction of the "F" arrow.

(d) The position of the dot on the end of the shaft with reference to the words "OPEN" and "CLOSED" inscribed on the etched plate, indicates the position of the shutter. Exposing by means of the "ONE-FRAME" shaft enables the operator to prolong the exposure given each frame and is especially useful under poor lighting conditions.

(e) To make single-frame exposures in the reverse direction, turn the small crank in the direction of the "R" arrow, but first advance the film as described in paragraph k. (3), this section. Turning the small crank in the reverse direction also winds the camera motor.

(f) Before releasing the small crank after winding the film backwards, be sure the starting button is *out*.

n. TO SET THE FRAME COUNTER.

(1) Remove the film chamber from the camera. Note the reading on the camera footage indicator. Push in on the end of the magazine locking lever (1, figure 11) and press the starting button. Release the button when the frame counter dial *approaches* the desired position. Use the "SINGLE-FRAME" release to bring the desired number in line with the pointer.

(2) Return the camera footage indicator dial to the reading it had before the film chamber was removed. Replace the film chamber.

(3) A simplified method for returning the frame counter to the starting point of an exposure, is as follows: Before starting the exposure, wind the motor spring tight (against the stop). Make the exposure. Close the shutter. Attach the small crank to the "EIGHT-FRAME" shaft, and *slowly* wind the film backward until the mechanical stop prevents further turning of the crank. The film and frame counter will be at their original starting positions. (See CAUTION: paragraph k. (3).)

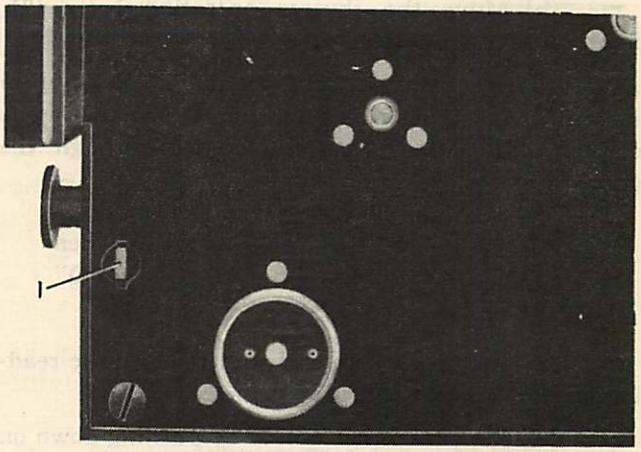


Figure 11—Location of Magazine Locking Lever

Index No.	Nomenclature
1	Lever—Magazine locking

o. TO HAND CRANK THE CAMERA.

NOTE

Hand cranking of the Ciné-Kodak Special in the forward direction is recommended only when the action to be photographed will require more than 38 feet of film (the run of the motor).

(1) FORWARD.

(a) Before starting an extended exposure, wind the camera motor tight. Attach the small crank to the "EIGHT-FRAME" shaft and lock it to the shaft by pressing down on the "CRANK RELEASE."

(b) When the starting button is pressed, the small crank will begin to turn and continue to turn. Lock the starting button in the taking position.

(c) When the warning bell sounds, indicating that the camera motor is nearly run down, follow the small crank around as it is turned by the motor. Be ready to turn the crank at the same rate of speed (two revolutions per second) as soon as the motor stops. The motor governor will resist any attempt to turn the crank at an excessive speed.

(2) REVERSE.

(a) To hand crank the camera in the reverse direction to create the effect of reverse action, it is first necessary to advance the length of film to be exposed.

(b) Move the shutter operating lever (21, figure 2) to "CLOSED."

(c) Press the starting button and hold it in until the desired length of film, as indicated by the camera footage indicator, has passed through the gate.

NOTE

The audible shutter warning will sound when the shutter lever is at the "CLOSED" position.

(d) Remove the film chamber. Note the reading on the camera footage indicator.

(e) Run down the camera by pushing down on the magazine locking lever (1, figure 11) and pressing the starting button until the motor stops.

(f) Reset the camera footage indicator dial. Replace the film chamber. Move the shutter operating lever to "OPEN."

(g) Lock the starting button in the picture-taking position. Make the reverse exposure by attaching the small crank to the "EIGHT-FRAME" shaft and turning it in the direction of the "REVERSE" arrow. For normal (16) speed pictures, turn the crank at the rate of two complete revolutions per second.

(h) At the completion of the exposure, *hold* the small crank and release the starting button.

NOTE

Making a reverse exposure also winds up the camera motor.

(i) Move the shutter operating lever to "CLOSED" and advance the film to the point at which the reverse exposure was originally started. Move the shutter operating lever to "OPEN."

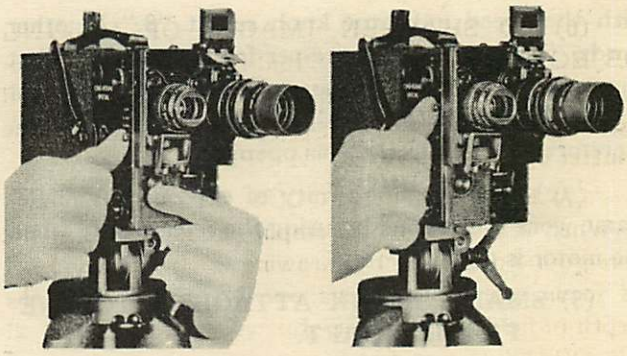
(j) Reverse action pictures may also be made by winding the camera motor and operating the camera upside down.

p. USES OF THE SHUTTER OPERATING LEVER.

(1) GENERAL.—The shutter operating lever is most often used for making dissolves, fade-ins, and fade-outs. However, it may also be used as an additional exposure control; to sharpen images of moving objects; to make backgrounds out of focus.

NOTE

The making of fade-ins, fade-outs, and dissolves at speed "64" is not recommended. When moving the shutter operating lever for fades, bear toward the front of the camera, so that the lever will not stop in the "¼-OPEN" or "½-OPEN" notches.



Fade-In Fade-Out

Figure 12—Using Shutter Operating Lever for Fade-In and Fade-Out

(2) TO MAKE A FADE-IN. (See figure 12.)—First set the shutter operating lever at "CLOSED." Press the starting button and at the same time start to slowly move the shutter operating lever toward "OPEN."

(3) TO MAKE A FADE-OUT.—Lock the starting button in the running position. When the action in the scene reaches the point for the fade-out, slowly move the shutter operating lever to "CLOSED." The camera motor will automatically stop and end the fade-out.

(4) TO MAKE A DISSOLVE.

(a) By means of a stop watch or by counting, keep track of the length of time (in seconds) needed for making the fade-out. Attach the small crank to the "EIGHT-FRAME" shaft. Hold the crank to prevent its turning, then press the starting button.

(b) Wind back the film to the start of the fade-out by giving the small crank three complete turns for each second needed to complete the fade-out (assuming that exposure was made at 24 frames per second). Release the starting button.

(c) Fade in on the next scene for the same number of seconds that it took to fade-out. The speed with which the shutter operating lever is operated determines the length of a fade-in, fade-out, and dissolve. It may be opened and closed uniformly for all scenes or regulated to match the tempo of the subject being filmed.

(5) AS AN EXPOSURE CONTROL.—If light under which pictures are to be made is so intense that even the smallest diaphragm opening will give overexposure, the exposure can be further reduced by moving the shutter operating lever from "OPEN" to "½-OPEN" (the equivalent of *one* smaller lens opening) or to "¼-OPEN" (the equivalent of *two* smaller openings).

(6) TO SHARPEN IMAGES OF MOVING OBJECTS.—Sharper individual-frame images of rapidly moving objects (cars, planes, etc.) can be obtained under good light and with a fast lens by setting the shutter operating lever at "½-OPEN."

(7) FOR OUT-OF-FOCUS BACKGROUNDS.—When it is desirable to emphasize an object in the foreground of a scene by throwing the background out of focus, use a large lens opening to decrease the depth-of-field and set the shutter operating lever at "¼-OPEN" to avoid overexposure.

q. ATTACHING FILTERS TO LENSES. (See figure 13.)

(1) Unscrew the insert (3) from the adapter ring (1), place the filter (2) in the recess of the insert, and screw the insert back into the adapter ring. Press (do not twist) the adapter ring over the lens hood so that the spring fingers will grip the lens hood firmly.

(2) The filter for the 25-mm *f*/1.9 lens is mounted in a W mount which, for use on the lens, replaces the lens hood of the 25-mm lens.

Filter Factor for CK-3 Filter

Film	Sunlight	Tungsten
Ciné-Kodak Super-X and Ciné-Kodak Super-XX	2	1.5

NOTE

Do not use the filter when exposing Kodachrome Film.

r. SPECIAL EFFECTS.

(1) MASKS.

(a) Double or other types of multiple exposures are made by exposing the same strip of film two or more times. The exposures may be made with or without the use of the masks.

NOTE

In all multiple exposure work the camera must be locked on a rigid tripod to insure accurate registration of each successive image recorded.

(b) Insert the masks with the mask pin toward the *front* of the camera.

(c) When using half-masks for double exposures do not use a smaller lens opening than *f*/5.6. If the light is bright, overexposure can be avoided by setting the shutter operating lever at "½-OPEN" or "¼-OPEN."

(d) To prevent any possibility of stray light reaching the film through the mask slot, replace the blind mask when the masks are not being used. Keep the masks covered with a thin film of oil (Specification No. AN-0-4).

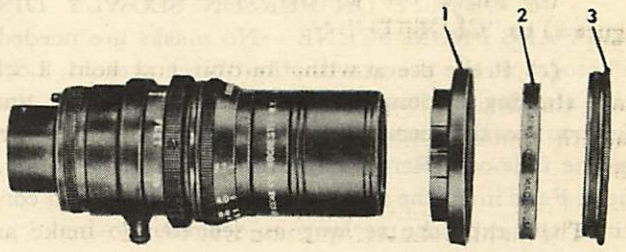


Figure 13—Attaching Filters to Lens

Index No.	Nomenclature	Index No.	Nomenclature
1	Ring—Adapter	3	Insert
2	Filter		

(2) DOUBLE AND MULTIPLE EXPOSURES.

(a) SUBJECT APPEARS IN SAME SCENE SEVERAL TIMES.—No masks are needed. Wind the camera motor tight. Place the subject against a *black* background in the desired position. Make the first exposure. Move the shutter operating lever to "CLOSED," and attach the small crank to the "EIGHT-FRAME" shaft. Hold the crank and lock the starting button in the running position. Turn the crank *slowly* in the direction of the "REVERSE" arrow until the motor rewind stop prevents further turning. Release the starting button. The film will be at the original starting position. Move the shutter operating lever to "OPEN." Reposition the subject. Repeat the filming and rewinding procedure for the number of times necessary to create the effect desired.

(b) LARGE SUBJECT DWARFED TO SIZE OF SMALL.

1. No masks are needed. Use a black background. Wind the camera motor tight. Make a close-up exposure of the small subject. Move the shutter operating lever to "CLOSED," and attach the small crank to the "EIGHT-FRAME" shaft. Hold the crank and lock the starting button in the running position. Turn the crank *slowly* in the direction of the "REVERSE" arrow until the motor rewind stop prevents further turning. Release the starting button. The film will be at the original starting position. Move the shutter operating lever to "OPEN."

2. Move the camera back until the large subject appears as small as desired in the reflex finder. Make the second exposure.

3. If it is difficult to obtain a black background of sufficient size to fill the field for the latter type of shot, place a piece of black paper (with hole cut in center) 1 or 2 feet in front of the camera lens. Use the reflex finder to see that the paper overlaps the background.

(c) OBJECT OR PERSON SLOWLY DISAPPEARS FROM SCENE.—No masks are needed. Photograph the scene with the object present. Lock the starting button in the running position and fade out on the scene. Wind the film back to the start of the fade-out. Remove the object from the camera field. Fade in on the scene without the object and continue the exposure as long as desired. To make an object *appear* rather than *disappear*, reverse the filming procedure.

(d) UPPER AND LOWER HALVES FUNCTION INDEPENDENTLY.—When it is desired to separate the action taking place above and below the horizontal middle of the projected picture, use the horizontal masks.

1. The tower of a building may be made to "telescope" into the lower part of the building as follows: Frame the entire building in the reflex finder. Insert the horizontal mask with the *upper* opening (pin toward the front of the camera) into the mask slot to mask off the tower.

2. Note the readings on the camera footage indicator and the frame counter. Make the exposure of the lower half of the building. Move the shutter operating lever to "CLOSED" and wind back the film. Move the shutter operating lever to "OPEN."

3. Insert the mask with the *lower* opening into the mask slot to mask off the lower half of the subject. Start the exposure and panoram the camera upward. On the projection screen the tower will appear to "telescope" into the building.

NOTE

Remember when using the horizontal masks that the image on the film is inverted. To mask out the *lower* half of the image seen in the reflex finder, use the horizontal mask with the *opening* at the bottom.

(e) OBJECT APPEARS TO BE TRANSPARENT.

1. No masks are needed. Wind the camera motor tight. Determine the correct exposure for photographing the scene *without* the object present, then *halve* this exposure. Make the exposure. Move the shutter operating lever to "CLOSED," and wind the film back with the small crank. Move the shutter operating lever to "OPEN." Rephotograph the scene with the object present. Do *not* change the exposure.

2. Transparent or "X-ray" views can also be made as follows: Note the readings of the camera footage indicator and the frame counter. Photograph the subject—a piece of mechanized equipment for example—in its entirety against a black background. Move the shutter operating lever to "CLOSED" and wind back the film to the original position. Remove the outer housing of the equipment and fade in for the second exposure.

(f) ALL OR PART OF A SUBJECT APPEARS TO VANISH.

1. The effect of a subject vanishing as it moves across a projection screen is created by use of the vertical masks. Use the reflex finder to frame and focus the subject that is to be moved across the lens field. Remove the blind mask from the slot. Insert the mask with the opening on the right (pin toward the front of the camera) if the action to be filmed is on the left side of the camera, and vice versa.

NOTE

Place the vertical masks according to the image in the reflex finder. The image is reverted by the reflex finder and appears as it will be recorded on the film.

2. Note the readings of the camera footage indicator and the frame counter. Photograph the action until the object has passed the mid-point of the lens field. Move the shutter operating lever to "CLOSED" and wind the film to the original starting position. Move the shutter operating lever to "OPEN." Remove the mask used for the first exposure. Insert the *unused* vertical mask (pin toward the front of the camera) and expose the second half of the picture.

3. Use of the vertical masks also makes it possible to have the same person or object appear twice in the same picture.

(g) PICTURE IN OVAL OR CIRCLE.—The oval or circle mask produces a projected image of the same shape. Important parts of the scene must be kept in the center of the picture. Special effects may

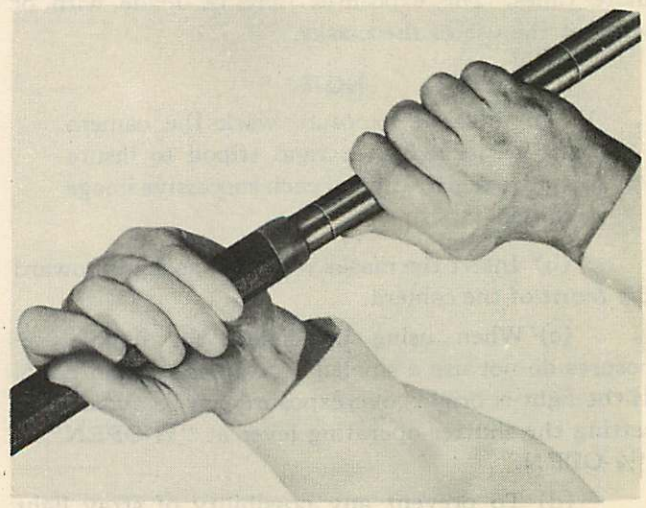


Figure 14—Adjusting Tripod Leg

be created by combining masked shots with double exposures.

CAUTION

Always insert masks into the mask slot as far as they will go. Be sure the pin is toward the *front* of the camera. Replace the blind mask when a special mask is not used.

s. TRIPOD OPERATION.

(1) ADJUSTING LEG LENGTH.

(a) The Ciné-Kodak tripod legs can be extended for use to any height between 2 feet 9½ inches and 4 feet 10 inches.

(b) Turn the round leg one-half turn in a clockwise direction and pull the leg out to the desired position as shown in figure 14. Bright rings on the round leg assembly at 6-inch intervals will facilitate setting the legs at equal extension.

(2) ATTACHING THE CAMERA. (See figure 15.)

(a) Turn the large tripod screw lock nut (1) down until the end of the tripod screw (2) extends through the tilt head approximately 3/8 inch.

(b) Place the camera on the tilt head with the camera tripod bushing in position to receive the tripod screw. Turn the screw into the bushing about ¼ inch or until the camera is snug against the tilt head.

(c) Tighten the large tripod screw lock nut (1).

(d) For taking pictures at horizontal or below, attach the camera to the tilt head as shown in figure 15. For filming at horizontal or above, attach as shown in figure 16.

(e) Screw the handle assembly (2, figure 16) into the tilt head as shown in figures 15 and 16, depending upon the mounted position of the camera.

(3) OPERATION.

(a) To panoram or lock the head in position, use the pan screw knob (3, figure 15). A very slight tension exerted by the pan screw is recommended for smooth swing of the camera in the horizontal.

(b) The vertical movement of the tilt head is regulated by the tilt adjusting screw (1, figure 16), which will lock the tilt head in any position or permit smooth movement when a slight tension is left on the friction washers.

NOTE

Smoother movement of the camera is possible if the handle (2, figure 16) is used.

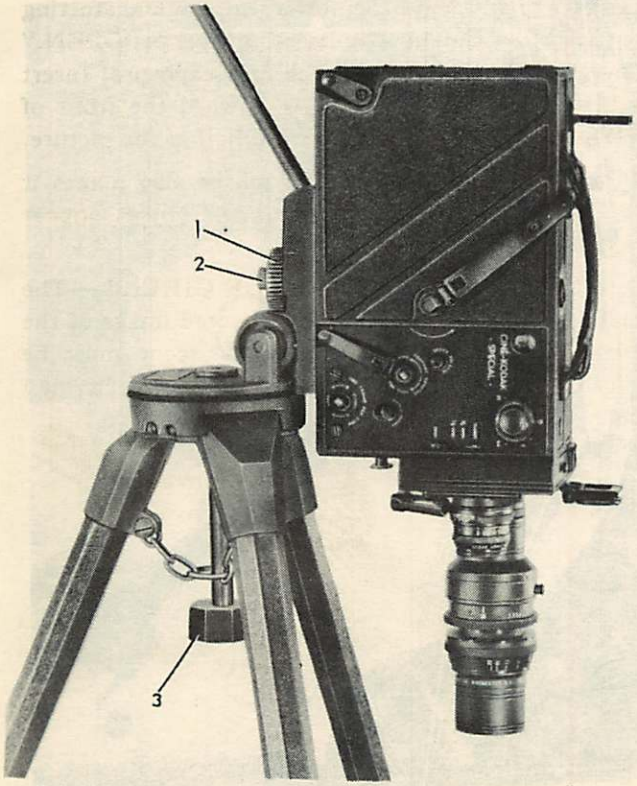


Figure 15—Camera Mounted for Taking Pictures at Horizontal or Below

Index No.	Nomenclature
1	Lock Nut—Tripod screw
2	Tripod Screw Knob Assembly
3	Pan Screw with Knob

Figure 16—Camera Mounted for Taking Pictures at Horizontal or Above

Index No.	Nomenclature
1	Tilt Adjusting Screw Assembly
2	Handle Assembly

SECTION V
SERVICE INSPECTION, MAINTENANCE, AND LUBRICATION

1. SERVICE TOOLS REQUIRED.

No special service tools are required.

2. SERVICE INSPECTION AND MAINTENANCE.

a. CLEANING LENSES.

(1) Remove dust and grit with a soft camel's-hair brush or air syringe. If smudges remain, rub the lens gently with a small piece of lintless, cotton cloth or lens cleaning paper wrapped around the end of a wooden toothpick or match.

(2) Rub the front and rear elements of the lens gently. If moisture is necessary, breathe on the lenses or use lens cleaner. Clean the lens only when dusty or smudged. Unnecessary wiping will injure the lens surfaces.

CAUTION

Never use polishing material, alcohol, or other solvents on the lenses.

(3) Do not permit the lenses to be exposed to the sun for long periods of time. Avoid extreme temperature changes.

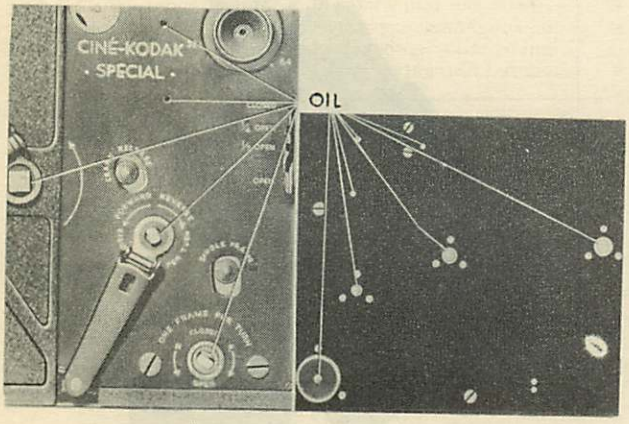


Figure 17—Points to Oil on the Ciné-Kodak Special

(4) Never disassemble the lens unit. Under normal conditions, cleaning of the inside surfaces is not necessary.

b. FILM GATE.

(1) Raise the spring lever (2, figure 18) and lift out the pressure pad (1).

(2) With the ball of the thumb rub off any accumulation on the polished tracks of the pressure pad. With a match stick covered with a clean cloth that has been dipped in Solvent, Dry Cleaning, Federal (Specification No. P-S-661a-1), remove any accumulation of dirt on the tracks of the film gate directly behind the pressure pad.

(3) Remove dust and lint on the edges of the rectangular aperture.

CAUTION

Be extremely careful not to scratch the polished tracks of the gate. Never scrape the tracks with a metallic tool.

(4) The film rides on six circular surfaces on the aperture plate (four at the corners of the aperture,

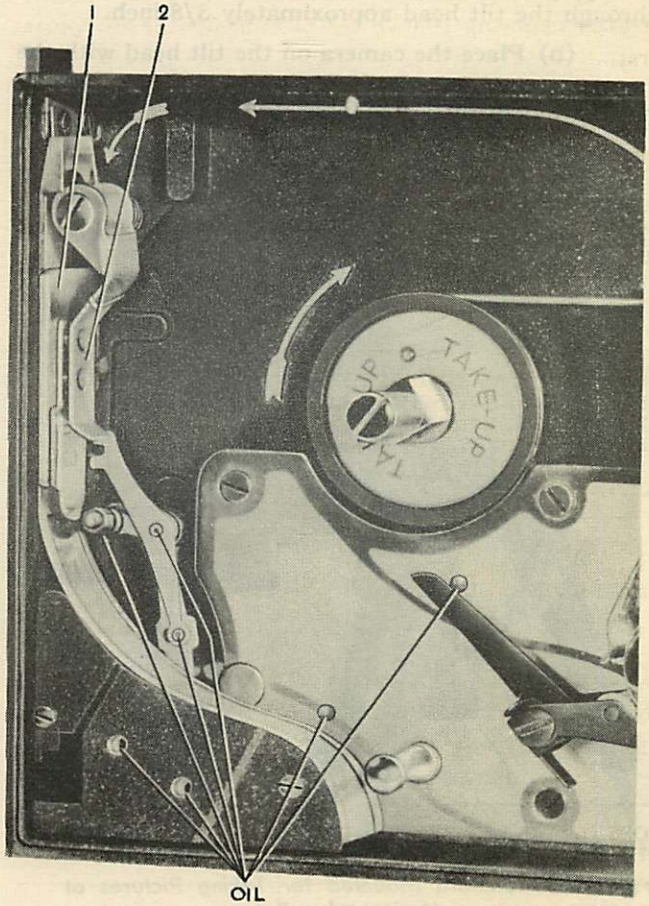


Figure 18—Points to Oil on the 100-Foot Film Chamber

Index No.	Nomenclature	Index No.	Nomenclature
1	Pad—Pressure	2	Lever—Spring

and two near the bottom of the plate). Make sure that these surfaces are clean before each roll of film is threaded for use.

c. REFLEX FINDER.

(1) Keep the reflex finder (4, figure 2) clean. If dust collects, blow on the glass. If this does not remove the dust, wrap a small, lintless cloth around a match stick and very gently wipe the surface.

(2) To reach the mirror and the under surface of the finder, remove the lens from the turret.

(3) To reach the top of the ground glass, slide the finder lens and finder button toward the right side of the camera.

d. FILTERS.—Filters require the same care as lenses.

3. LUBRICATION.

a. CAMERA MECHANISM.

(1) Use Oil; Low Temperature, Lubricating, Gear Specification No. AN-0-3.

(2) Oil the camera mechanism every six months or after exposing 10,000 feet of film, whichever comes first.

(3) Place the camera on its side with the etched control plate up. Apply one drop of oil to the points indicated in figure 17. After applying the oil, run the camera several seconds at speed "16" to spread the oil over the bearing surfaces. Wipe off all excess oil.

(4) Remove the film chamber and lay the mechanism half of the camera, etched control plate down, on a support. Do not lay the camera directly on the table or the shutter operating lever may be damaged. Apply one drop of oil to the points indicated in figure 17. Press the magazine locking lever (1, figure 11) and operate the camera intermittently. Wipe off all excess oil.

b. FILM CHAMBER.

(1) Apply one drop of oil to the points indicated in figure 18. Attach the chamber to the camera and run the mechanism intermittently.

(2) Be sure all excess oil is removed, particularly at those points near the film track. Oil on the film will cause spots in the developed image.

c. MASKS.—A thin coating of oil (Oil; Gyro Instrument Lubricating, Specification No. AN-0-4) on the masks will keep them from rusting and assure smooth operation in the mask slot.

4. SERVICE TROUBLES AND REMEDIES.

TROUBLE	CAUSE	REMEDY
SCRATCHES ON FILM	Binding of rollers or roughness of surfaces over which film passes.	Check the following points and eliminate the binding or roughness; spring lever roller, pressure pad, lower guide stud, sprocket clamp rollers, film guides, and curved film gate.
PRESSURE MARKS, DETECTED AS A THIN, FUZZY, WHITE LINE CLOSE TO THE LEFT SIDE OF THE PICTURE WHEN A DARK BACKGROUND IS IN THE PROJECTED IMAGE	Uneven pressure on the film within the film chamber.	Run test film through the chamber to detect the source of pressure. If necessary, retard the movement of the film by using the small crank on the "EIGHT-FRAME" shaft.
FLICKER WHEN SINGLE AND EIGHT-FRAME EXPOSURES ARE PROJECTED.	Binding in the camera or film chamber mechanism which causes slow starting.	Check the camera and film chamber separately and together to find the cause of the binding. Sometimes lack of oil will slow the mechanism. Refer to section V.
	Camera mechanism excessively cold.	Permit camera to warm up.
INCORRECT FRAMING LINE	Pull-down claw out of adjustment.	Adjust the pull-down claw. Refer to section VI, par. 6.a.(3)(h).
	Excessive drag on the supply spool.	Check the film chamber mechanism for the cause.
LOSS OF UPPER LOOP IN FILM CHAMBER	Perforations in film not engaged with teeth in the sprocket.	Make necessary adjustment. Refer to section IV, par. 2.c.
LOSS OF LOWER LOOP IN FILM CHAMBER	Pull-down claw skipping perforations in film.	If the pull-down claw is broken or worn, replace. Refer to section VI, par. 6.a.(3).
	Claw crankshaft bracket loose.	Adjust the pull-down claw and tighten the two screws on the clamp. Refer to section VI, par. 6.a.(3).

TROUBLE	CAUSE	REMEDY
PROJECTED FILM OUT OF FOCUS	Lens turret not properly aligned.	Make alignment test. Refer to section VII.
	Insufficient tension on pressure plate.	Replace spring-lever spring. Refer to section VI, par. 5.d.(11).
LEAK LIGHT	Blind mask not in slot.	Replace mask.
	Velvet ribbon on front removed or worn.	Replace the ribbon. Refer to section VI, par. 2.b.(4).
GENERAL UNDEREXPOSURE THROUGHOUT FILM	Shutter operating lever not correctly set.	Be *sure* the camera is properly set *before* exposing film.
BLURRED IMAGE	Dirty lens.	Refer to section V, par. 2.
UNSTEADINESS	Pull-down claw loose or worn.	Replace or tighten the claw. Refer to section VI, par. 6.a.(3).
	Insufficient tension on pressure plate.	Replace the spring-lever spring. Refer to section VI, par. 5.d.(11).

SECTION VI
DISASSEMBLY, INSPECTION, REPAIR, AND REASSEMBLY

1. OVERHAUL TOOLS REQUIRED.

Part No.	Nomenclature	Application
46	Spring—Speed adjustment	For timing motor revolutions
68	Film Strip—Frame line check	For adjusting frame line
39	Insert—Special brass tubing, for drive coupling	For removing taper pin from drive coupling
45	Fixture—Front locating	For aligning front with camera mechanism
68562-A	Reamer	For reaming governor shaft, clutch shaft, and worm gear shaft bushing
68562-B	Reamer	For reaming winding crankshaft bushing
68562-C	Reamer	For reaming eight-frame shaft bushing
68562-D	Reamer	For reaming single-frame shaft bushing and bottom plate
	Test Chart	For testing focus and reflex finder. Refer to figure 36.

2. DISASSEMBLY.

NOTE

To facilitate reassembly, it is very helpful to notice the position of parts before they are disassembled. This is particularly true of the Ciné-Kodak Special where tolerances are exceptionally small.

a. LENS UNIT AND FILM CHAMBER.—Remove the lens unit and film chamber. (Refer to section IV, paragraph 2.)

b. FRONT COMPLETE WITH LENS TURRET ASSEMBLY. (See figure 19.)

(1) REMOVAL FROM CAMERA CASE.

(a) Note the position of the top and side of the front complete in relation to the camera case. This is important as the front must be attached to the case in the same position during reassembly. Penciled registration marks are an aid.

(b) Turn the turret (3) to expose two of the large front-to-case screws (1) and frame the third screw through the hole in the turret guide plate. Remove these three screws. Again turn the turret until the remaining large screw can be seen through the hole in the turret plate. Remove this screw. Mark these four screws so that they can be replaced in the same holes from which they were taken.

(c) Lift off the front complete and at the same time withdraw the film gate stop plate (12) from beneath the shutter. Further disassembly of the front complete is not necessary except for repair.

(2) DISASSEMBLY OF LENS TURRET ASSEMBLY AND FRONT.

NOTE

Do not remove the lens turret assembly from the front unless it is necessary to replace the reflex finder lens or finder cover plate slide assembly. Turret assemblies are not interchangeable.

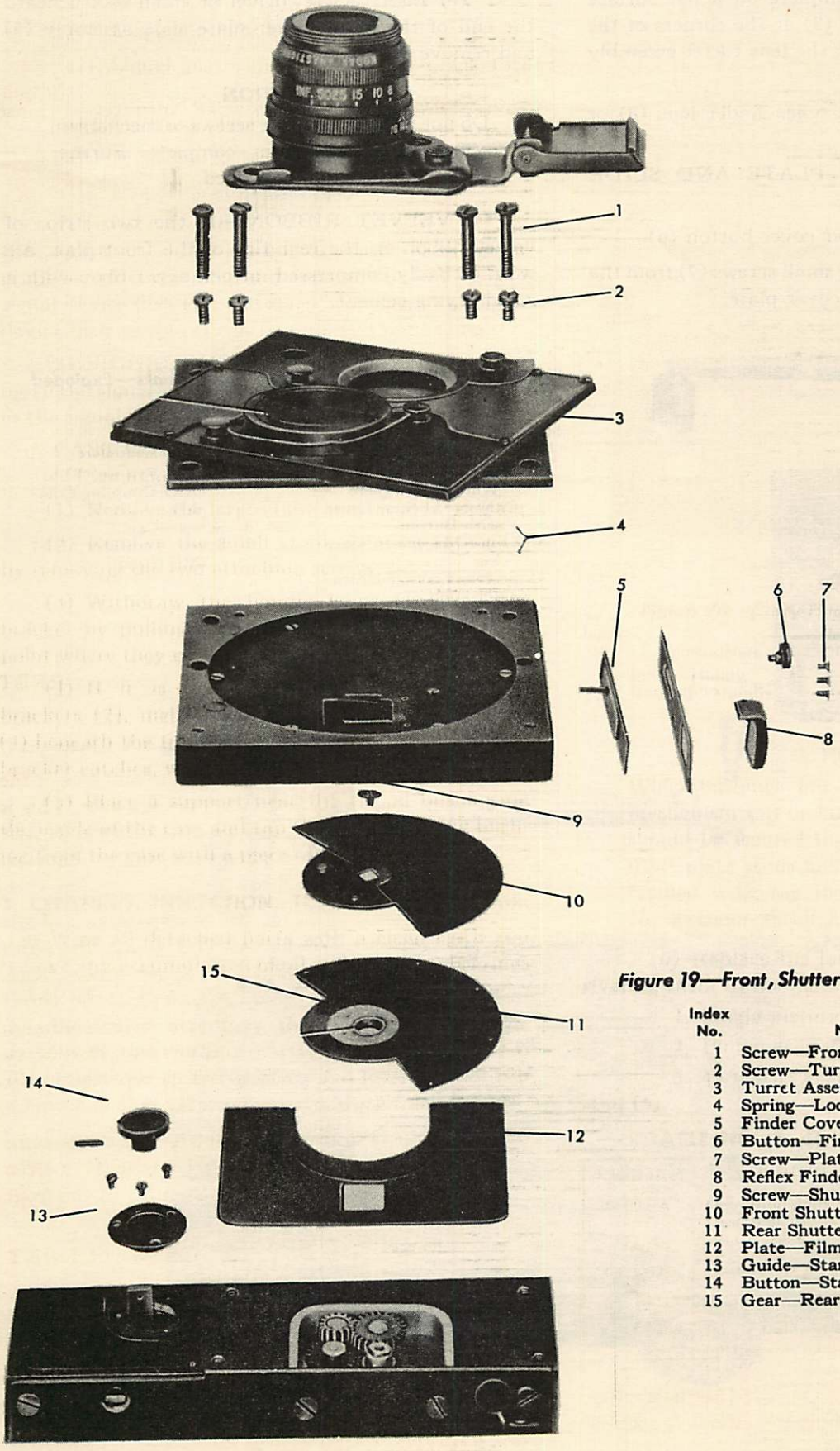


Figure 19—Front, Shutter, and Turret—Exploded View

Index No.	Nomenclature
1	Screw—Front to case
2	Screw—Turret assembly to front
3	Turret Assembly Complete
4	Spring—Locating
5	Finder Cover Plate Slide Assembly
6	Button—Finder cover
7	Screw—Plate to front
8	Reflex Finder Lens Mounted
9	Screw—Shutter
10	Front Shutter Blade Complete
11	Rear Shutter Blade Complete
12	Plate—Film gate stop
13	Guide—Starting lever
14	Button—Starting
15	Gear—Rear shutter blade

(a) Lay the front complete on a flat surface and remove the four screws (2) at the corners of the lens turret assembly. Lift off the lens turret assembly (3).

(b) Do not drop the reflex finder lens (8) or locating spring (4).

(3) FINDER COVER PLATE AND SLIDE ASSEMBLY.

(a) Unscrew the finder cover button (6).

(b) Remove the three small screws (7) from the plate and lift off the finder cover plate.

(c) Insert a screwdriver or small tool beneath the end of the finder cover plate slide assembly (5) and remove the slide.

CAUTION

Do not tamper with the screws or mechanism remaining in the front complete. Further disassembly is not approved.

(4) VELVET RIBBON.—If the two strips of velvet ribbon on the rear side of the front plate are worn or badly compressed, attach new ribbon with a rapid drying cement.

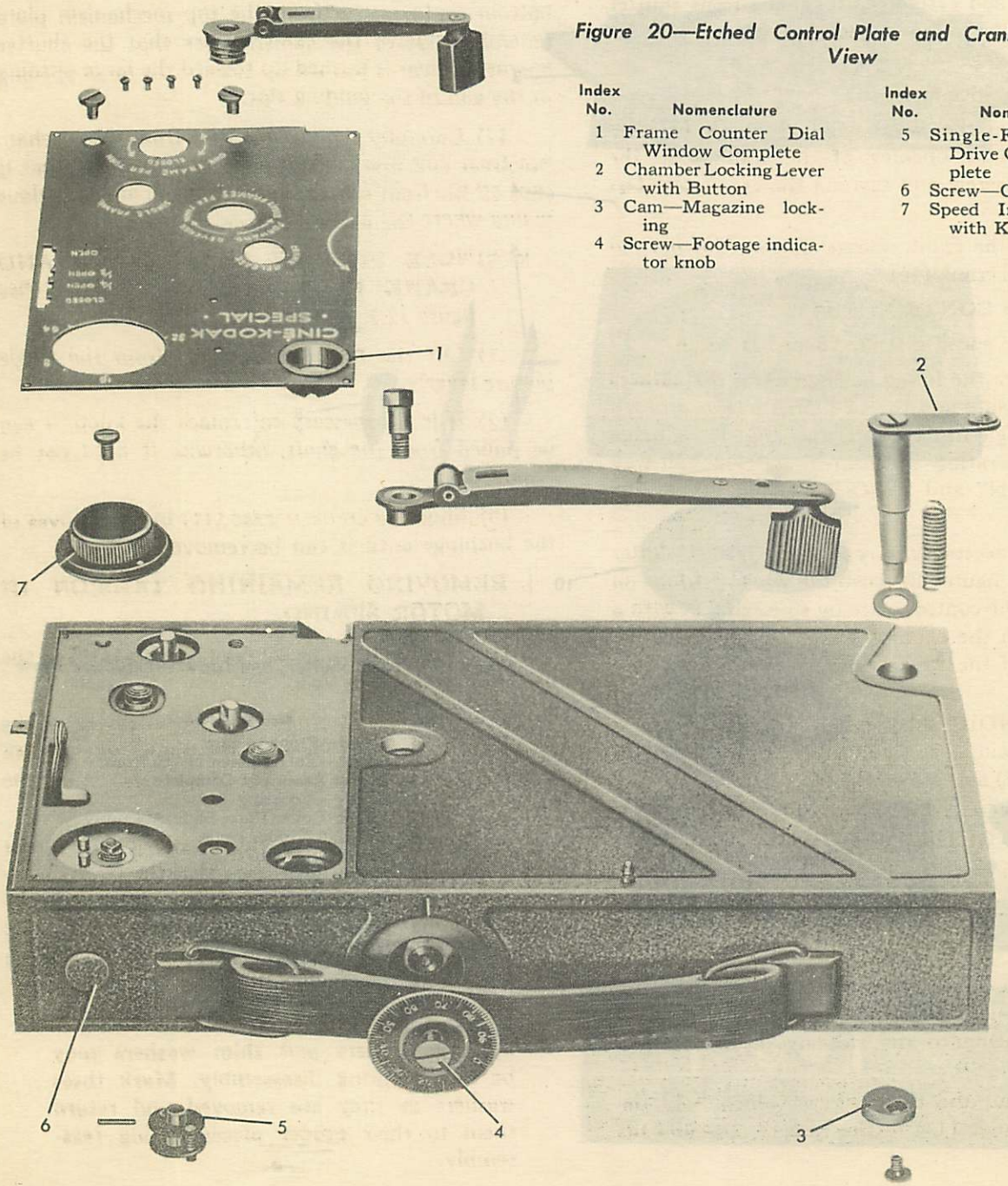


Figure 20—Etched Control Plate and Cranks—Exploded View

Index No.	Nomenclature
1	Frame Counter Dial Window Complete
2	Chamber Locking Lever with Button
3	Cam—Magazine locking
4	Screw—Footage indicator knob
5	Single-Frame Shaft Drive Coupling Complete
6	Screw—Cap
7	Speed Indicator Dial with Knob

c. SHUTTER. (See figure 19.)

(1) Press the starting button and let the mechanism run a second or two; then release the button.

(2) Set the shutter operating lever to the "OPEN" position.

(3) With a pencil, make a mark on the edge of the shutter gear box and front of the chamber along the straight edge of the shutter blade. This mark will act as a guide for properly replacing the shutter during reassembly. Be sure the shutter operating lever is set at "OPEN" before making this mark.

(4) Remove the screw (9) from the center of the shutter blades and carefully lift off the front shutter blade (10). Then remove the rear blade (11). Be careful to disengage the gears.

d. CRANK. (See figure 2.)

(1) Remove the large winding crank (22) by placing the square opening of the crank over the square headed screw and turning the crank counterclockwise.

(2) Move the crank release button (20) up and lift off the small crank (16).

e. ETCHED CONTROL PLATE.

(1) Set the speed dial (23, figure 2) to "8."

(2) Remove the four small screws in the corners of the control plate and the two large screws on each side of the single-frame shaft opening. Then move the shutter operating lever to a position half-way between "OPEN" and "½-OPEN" and lift off the control plate.

(3) If it is necessary to replace the frame counter dial window (1, figure 20) crush the window frame on the outside of the control plate by squeezing in with a pair of pliers on the exposed flange. A new assembly must be used if the window frame is removed from the plate.

f. SPEED INDICATOR DIAL. (See figure 20.)—Remove the retaining screw in the center of the speed indicator dial (7) and lift off the dial.

g. STARTING BUTTON AND STARTING LEVER GUIDE. (See figure 19.)

(1) Push in on the exposed end of the magazine locking lever (1, figure 11) and press in the starting button until it catches. Allow the mechanism to run down.

(2) Place a support under the starting button (14, figure 19) and drive out the taper pin which holds the starting button to the starting lever. Remove the button.

(3) Take out the three screws which hold the starting lever guide (13) to the camera case and lift out the guide.

h. CHAMBER LOCKING LEVER COMPLETE. (See figure 20.)—Remove the screw from the end of the locking device shaft and remove the lever (2).

i. FOOTAGE INDICATOR DIAL. (See figure 20.)—Loosen the screw (4) at the center of the dial. Place the hand over the indicator and turn the camera upside down so that the footage indicator dial, shoulder screw, sleeve, spring washer, and flat washer will drop into the hand.

j. REMOVING MECHANISM FROM CASE. (See figure 21.)

(1) Remove the four corner screws (2) and the bottom center screw from the top mechanism plate (chamber side of the camera). See that the shutter operating lever is pushed up toward the large opening in the end of the guiding slot.

(2) Carefully remove the case from the mechanism (rear end first), manipulating the case so that it slips off the front end of the mechanism at the various points where the parts interlock.

k. SINGLE PICTURE LEVER KNOB AND CRANK RELEASE LOCK SLIDE. (See figure 22.)

(1) Lift the fiber washer (12) from the single picture lever.

(2) If it is necessary to replace the knob, it can be pulled from the shaft, otherwise it need not be removed.

(3) Slide the crank release (11) in the grooves of the bushings until it can be removed.

l. REMOVING REMAINING TENSION IN MOTOR SPRING.

(1) Attach the large winding crank and wind the motor a fraction of a turn.

(2) From between the mechanism plates at the rear of the mechanism, turn the signal device disk (shown removed, 2, figure 24) one notch toward the center of the camera.

(3) Press the starting button and let the motor run completely down. If the stud on the large motor gear stops against the signal device disk, turn the motor winding crank just enough to release the signal device disk. Then turn the disk so that the slot is opposite the stud and allow the motor to run down.

NOTE

Spacing washers and shim washers may be found during disassembly. Mark these washers as they are removed and return them to their proper places during reassembly.

m. SINGLE-FRAME SHAFT DRIVE COUPLING COMPLETE. (See figure 20.)

(1) Insert the special brass tubing insert between the coupling and the bushing.

(2) Turn the coupling (5) until the small end of the taper pin can be seen. Tap the pin loose, again turn the shaft and remove the pin with tweezers.

(3) Remove the tool and the coupling complete.

CAUTION

Never try to remove the pin without using the special tool.

n. SEPARATING MECHANISM PLATES. (See figure 21.)

(1) Remove the two small screws (1) from the top mechanism plate to detach the stop lever bracket.

(2) Remove the screw (5) from the starting lever link.

NOTE

Be sure the motor is completely run down as described above.

(3) Remove the six screws (3, figure 21) from the

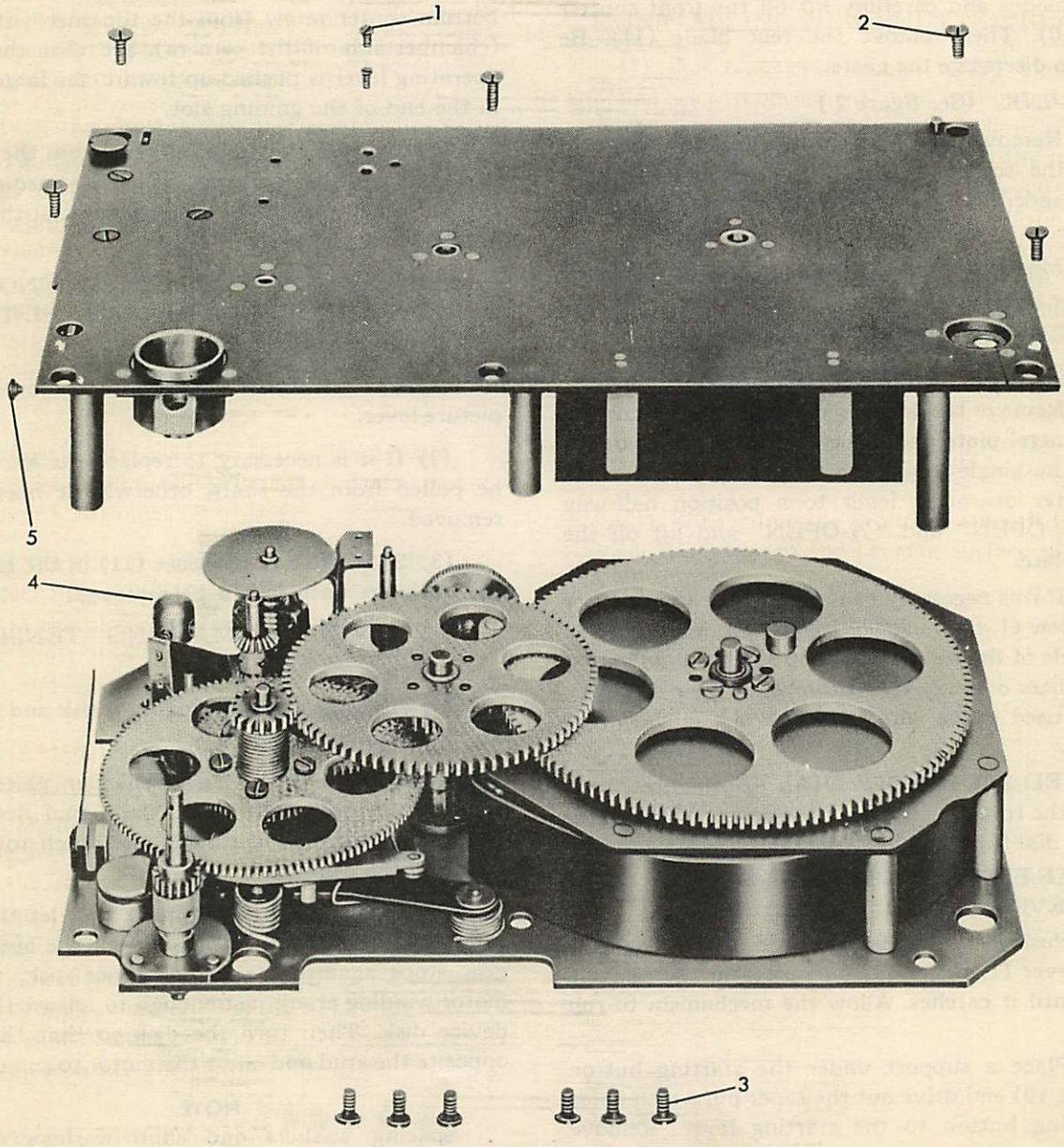


Figure 21—Separating Mechanism Plates

Index No.	Nomenclature
1	Screw—Brake lever bracket to top plate
2	Screw—Top plate to case
3	Screw—Bottom plate to top plate
4	Nut—Adjusting
5	Screw—Starting lever link

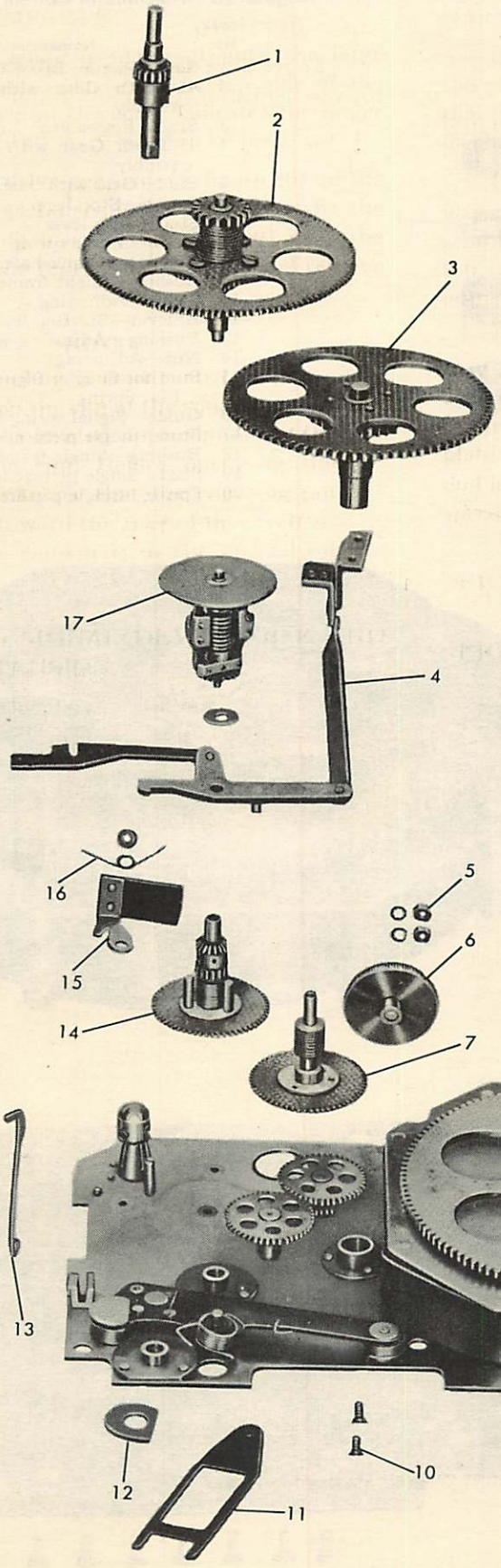
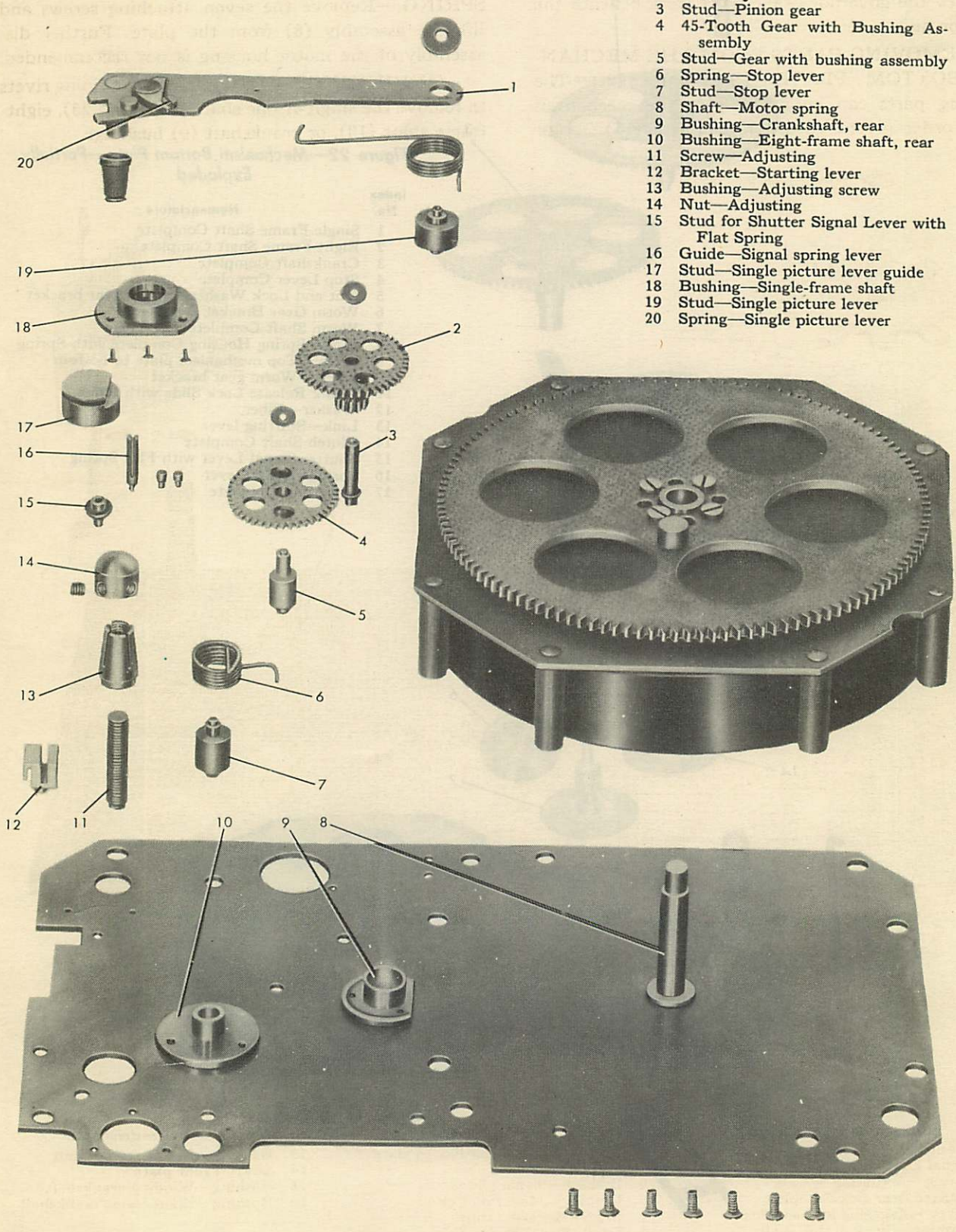


Figure 22—Mechanism Bottom Plate—Partially Exploded

Index No.	Nomenclature
1	Single-Frame Shaft Complete
2	Eight-Frame Shaft Complete
3	Crankshaft Complete
4	Stop Lever Complete
5	Nut and Lock Washer—Worm gear bracket
6	Worm Gear Bracket Complete
7	Worm Shaft Complete with Gear
8	Motor Spring Housing Complete with Spring
9	Screw—Top mechanism plate to bottom
10	Screw—Worm gear bracket
11	Crank Release Lock Slide with Knob
12	Washer—Fiber
13	Link—Starting lever
14	Clutch Shaft Complete
15	Shutter Signal Lever with Flat Spring
16	Spring—Signal lever
17	Governor Complete

Figure 23—Mechanism Bottom Plate—Exploded

Index No.	Nomenclature
1	Single Picture Lever Complete
2	45-Tooth Gear with Pinion Assembly
3	Stud—Pinion gear
4	45-Tooth Gear with Bushing Assembly
5	Stud—Gear with bushing assembly
6	Spring—Stop lever
7	Stud—Stop lever
8	Shaft—Motor spring
9	Bushing—Crankshaft, rear
10	Bushing—Eight-frame shaft, rear
11	Screw—Adjusting
12	Bracket—Starting lever
13	Bushing—Adjusting screw
14	Nut—Adjusting
15	Stud for Shutter Signal Lever with Flat Spring
16	Guide—Signal spring lever
17	Stud—Single picture lever guide
18	Bushing—Single-frame shaft
19	Stud—Single picture lever
20	Spring—Single picture lever



mechanism bottom plate which hold the plate to the spacing posts.

(4) Lift the mechanism top plate from the mechanism bottom plate. As the top plate is lifted, withdraw the governor brake lever from beneath the governor disk.

o. REMOVING PARTS FROM THE MECHANISM BOTTOM PLATE. (See figure 22.)—The following parts can be lifted from the mechanism in the order given: governor complete (17), motor winding crankshaft complete (3), eight-frame shaft complete (2), clutch shaft complete (14), and the single-frame shaft and pinion (1).

(1) MOTOR HOUSING COMPLETE WITH SPRING.—Remove the seven attaching screws and lift the assembly (8) from the plate. Further disassembly of the motor housing is not recommended.

(2) BUSHINGS.—Drill the three retaining rivets to remove the single-frame shaft (18, figure 23), eight-frame shaft (10), or crankshaft (9) bushings.

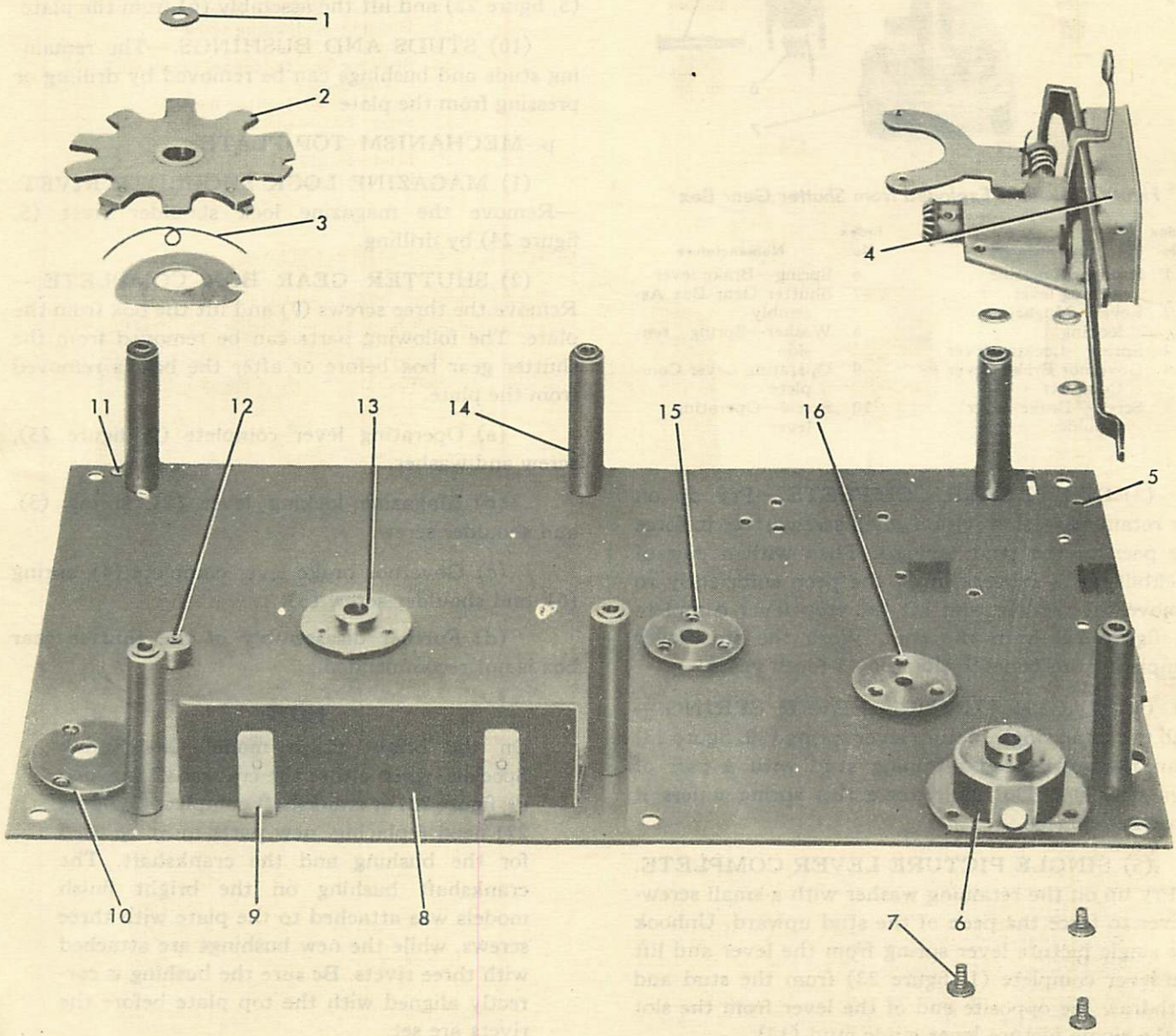


Figure 24—Mechanism Top Plate—Exploded

Index No.	Nomenclature
1	Washer—Signal device disk
2	Signal Device Disk Complete
3	Spring—Actuating
4	Shutter Gear Box Complete
5	Rivet—Magazine lock shoulder
6	Bushing—Single-frame shaft
7	Screw—Shutter gear box to plate
8	Plate—Signal
9	Bracket—Signal plate
10	Bushing—Magazine lock
11	Stud—Magazine stop
12	Stud—Signal device disk
13	Bushing—Motor spring shaft
14	Stud—Front plate
15	Bushing—Winding crankshaft
16	Bushing—Eight-frame crankshaft

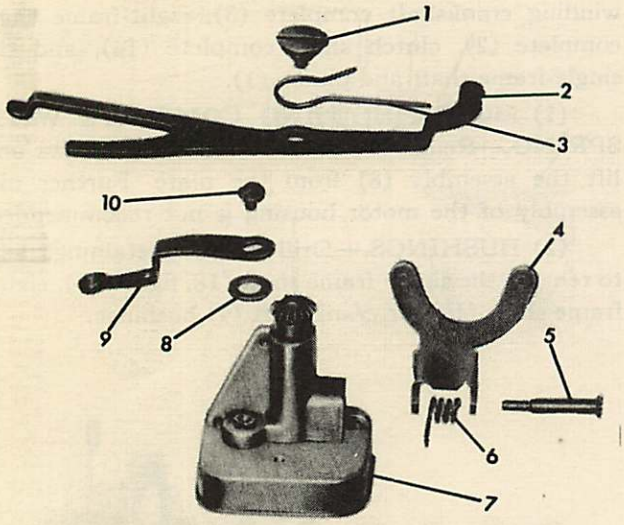


Figure 25—Parts Exploded from Shutter Gear Box

Index No.	Nomenclature	Index No.	Nomenclature
1	Screw—Magazine locking lever	6	Spring—Brake lever
2	Lever—Magazine locking	7	Shutter Gear Box Assembly
3	Spring—Locking lever	8	Washer—Spring tension
4	Governor Brake Lever Complete	9	Operating Lever Complete
5	Screw—Brake lever shoulder	10	Screw—Operating lever

(3) STOP LEVER COMPLETE.—Pry up on the retaining washer with a small screwdriver to force the peen of the stud upward. Then with a pair of duckbill pliers squeeze in on the peen sufficiently to remove the washer, and lift the stop lever complete (4, figure 22) from the stud. Work the stop lever complete from beneath the two 45-tooth gears.

(4) SINGLE PICTURE LEVER SPRING.—Pull the small single picture lever spring (20, figure 23) from the softheaded retaining stud with a pair of pointed pliers. Do not remove this spring unless it must be replaced.

(5) SINGLE PICTURE LEVER COMPLETE.—Pry up on the retaining washer with a small screwdriver to force the peen of the stud upward. Unhook the single picture lever spring from the lever and lift the lever complete (1, figure 23) from the stud and withdraw the opposite end of the lever from the slot in the single picture lever guide stud (17).

(6) SHUTTER SIGNAL LEVER WITH FLAT SPRING.—Pry the washer up as in paragraph (5) above and remove the washer and tension spring (16, figure 22). The signal lever stud (15, figure 23) must be drilled to remove the shutter signal lever with flat spring (15, figure 22), as there is a retaining collar on the stud.

(7) ADJUSTING NUT AND SCREW.—Loosen the Allen setscrews in the adjusting nut (14, figure 23) and unscrew the nut. Remove the adjusting screw (11) by unscrewing it from the case side of the mechanism plate.

(8) 45-TOOTH GEARS.—Remove these two gears (2 and 4, figure 23) by prying up the washers as in paragraph (5) above.

(9) WORM GEAR BRACKET COMPLETE.—Remove the two attaching screws, washers, and nuts (5, figure 22) and lift the assembly (6) from the plate.

(10) STUDS AND BUSHINGS.—The remaining studs and bushings can be removed by drilling or pressing from the plate.

p. MECHANISM TOP PLATE.

(1) MAGAZINE LOCK SHOULDER RIVET.—Remove the magazine lock shoulder rivet (5, figure 24) by drilling.

(2) SHUTTER GEAR BOX COMPLETE.—Remove the three screws (7) and lift the box from the plate. The following parts can be removed from the shutter gear box before or after the box is removed from the plate.

(a) Operating lever complete (9, figure 25), screw and washer.

(b) Magazine locking lever (2), spring (3), and shoulder screw.

(c) Governor brake lever complete (4), spring (6), and shoulder screw (5).

(d) Further disassembly of the shutter gear box is not recommended.

NOTE

On the bright finish model Ciné-Kodak Specials, when either the crankshaft bushing (9, figure 23) or crankshaft complete (3, figure 22) need replacing, new parts must be used for the bushing and the crankshaft. The crankshaft bushing on the bright finish models was attached to the plate with three screws, while the new bushings are attached with three rivets. Be sure the bushing is correctly aligned with the top plate before the rivets are set.

(3) BUSHINGS AND STUDS. (See figure 24.)—The following bushings and studs can be removed from the plate by drilling the attaching rivets.

(a) Winding crankshaft bushing (15).

(b) Eight-frame crankshaft bushing (16).

(c) Single-frame shaft bushing (6).

(d) Motor spring shaft bushing (13).

(e) Magazine lock bushing (10).

(f) Signal plate and signal plate bracket (8 and 9).

(g) Six front plate studs (14).

(h) Magazine lock shoulder rivet (5).

(i) Magazine stop stud (11).

(4) SIGNAL DEVICE DISK COMPLETE. (See figure 24.)—Pry up on the washer as in paragraph o. (5) preceding and remove the washer (1), signal device disk (2), and tension washer. The signal device disk stud (12) can be removed by drilling.

(5) SIGNAL HAMMER COMPLETE.—Remove the signal hammer complete in the same manner as the signal device disk.

q. CASE COVERED WITH CARRY HANDLE. (See figure 26.)

(1) Remove the large crank snap stud by drilling.

(2) Remove the small crank locating spring (4) by removing the two attaching screws.

(3) Withdraw the handle loops (1) from the bracket by pulling outward on the two sides at the point where they enter the handle bracket.

(4) If it is necessary to replace the handle brackets (2), melt the solder on the reinforcements (3) beneath the top of the case and after bending the bracket catches, withdraw the brackets from the case.

(5) Place a support near the tripod bushing on the inside of the case and tap the tripod bearing bushing from the case with a piece of wood.

3. CLEANING, INSPECTION, TESTING, AND REPAIR.

a. Wipe all detached parts with a clean cloth and remove any accumulation of oil and dirt from bearings and studs.

b. Particular attention should be paid to the freedom of the working parts as the mechanism is reassembled. Be sure that gears and levers do not rub or bind and that all moving parts work freely.

c. Use oil (Specification No. AN-0-4) sparingly and wipe off any excess with a clean cloth.

4. REASSEMBLY OF CAMERA MECHANISM.

a. MECHANISM BOTTOM PLATE.

(1) BUSHINGS AND STUDS. (See figure 23.)

(a) Attach the following bushings with three rivets each.

1. Crankshaft bushing, rear (9).
2. Eight-frame shaft bushing (10).
3. Single-frame shaft bushing (18).

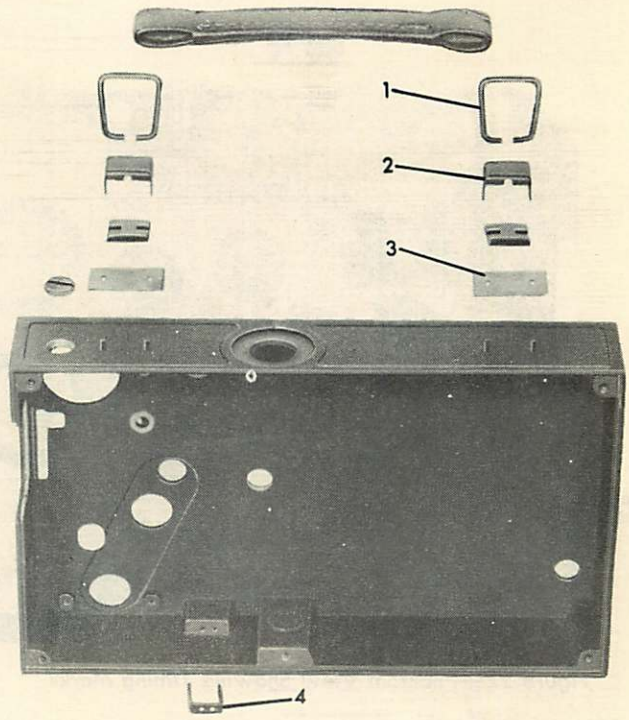


Figure 26—Carry Handle Exploded from Case

Index No.	Nomenclature	Index No.	Nomenclature
1	Loop—Handle	3	Reinforcement—Handle bracket
2	Bracket—Handle	4	Spring—Small crank retaining

NOTE

When bushings are replaced in either the mechanism top or bottom plates, the plates should be secured together by means of the front plate studs and the new bushings line reamed with the reamers shown in Table No. 3. Ream through the bottom plate first.

(b) Replace the following studs and shafts by riveting them to the mechanism plate.

1. Single picture lever stud (19).
2. Pinion gear stud (3).
3. 45-tooth gear with bushing assembly stud (5).

TABLE NO. 3—LINE REAMER CHART

REAMER	BUSHING	REMARKS
68562-A	Governor shaft Clutch shaft Worm shaft	Bearing is part of plate Bearing is part of plate
68562-B	Crankshaft	
68562-C	Eight-frame shaft	
68562-D	Single-frame shaft bottom mechanism plate	The single-frame shaft bushing in the mechanism top plate is reamed for fit and should be used only as a guide for reaming the bushing in the bottom mechanism plate.

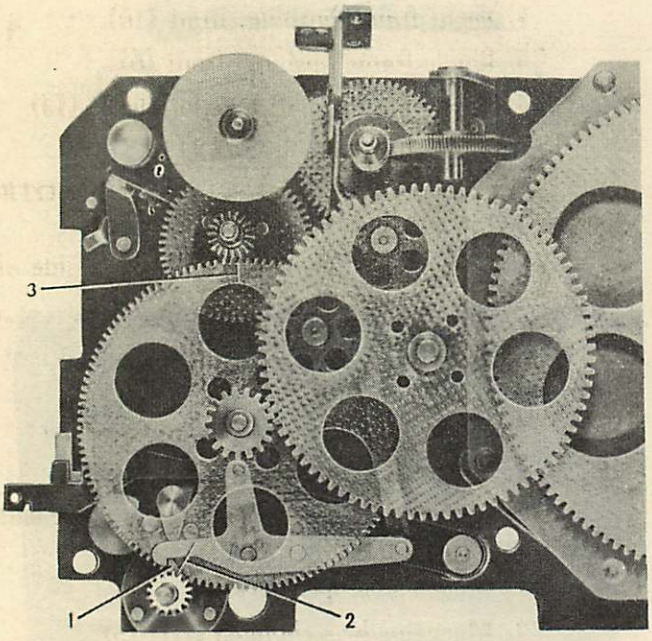


Figure 27—Phantom View Showing Timing Marks

4. Stop lever stud (7).
5. Adjusting screw bushing (13).
6. Signal spring lever guide (16).
7. Motor spring shaft (8).
8. Starting lever bracket (12).

(c) The shutter signal lever stud must be replaced as described in section VI, paragraph 4. a. (6).

(2) SINGLE PICTURE LEVER COMPLETE. (See figure 23.)

(a) Place the single picture lever spring over the single picture lever stud (19). Then insert the short end of the spring into the hole in the plate. Slide the end of the single picture lever (1) into the groove of the guide stud (17) and place the other end over the single picture lever stud. Place the washer on the stud and peen the end of the stud.

(b) Hook the long end of the spring over the single picture lever as shown in figure 22.

(3) STOP LEVER COMPLETE.

(a) Place the stop lever spring (6, figure 23) over the stop lever stud (7). Insert the short end of the spring into the hole in the plate and bend the end to a position parallel to the plate.

(b) Place the hole in the stop lever (4, figure 22) over the stud with the bracket end extending toward the top edge of the plate and between the 45-tooth gear studs as shown in figure 27. Swing the lever sufficiently to hook the end of the spring over the stud extending down from the stop lever.

(c) Place the washer over the stud and peen the head.

(4) 45-TOOTH GEARS.—Place the two 45-tooth gear assemblies (2 and 4, figure 23) and washers on their studs and peen the stud heads. Location of the gears in place is shown in figure 22.

(5) MOTOR HOUSING COMPLETE WITH SPRING.—Place the motor complete (8, figure 22) over the motor spring shaft (8, figure 23) and secure it to the plate with the seven retaining screws.

(6) SHUTTER SIGNAL LEVER STUD AND SHUTTER SIGNAL LEVER WITH FLAT SPRING.

(a) Place the shutter signal lever (15, figure 22) beneath the flange on the shutter signal lever stud (15, figure 23) and rivet the stud to the mechanism plate.

(b) Place the signal lever spring (16, figure 22) over the stud with one end of the spring against the shutter signal lever guide and the other end of the spring against the spring bracket in such a position that the signal lever spring is held against the front signal lever stop pin.

(c) Put the washer on the stud over the signal lever spring and peen the end of the stud.

(7) SINGLE-FRAME SHAFT COMPLETE.—Place the single-frame shaft complete (1, figure 22) into the single-frame shaft bushing. Turn the shaft until the stop is against the notch in the stop lever as shown at (1) in figure 27. *Hold the shaft in this position while replacing the remaining gears.*

NOTE

The replacement single-frame shaft complete is supplied without the 16-tooth gear pinned to the shaft. To drill the gear and shaft, place a .003-inch shim between the gear and the stop, and push the gear tight against the shim. Rotate the gear on the shaft until a tooth opposite the flat side of the stop has the same relative position as on the single-frame shaft removed from the camera. Maintain this relationship between the gear and the stop and drill through the gear collar and shaft. Taper ream the hole and set the taper pin.

(8) EIGHT-FRAME SHAFT COMPLETE.—Place a drop of oil (Oil, Castor, Specification No. AN-JJJ-0-316) on the clutch spring, spread the coils slightly with a small screwdriver and permit the oil to work into the shaft. Insert the eight-frame shaft (2, figure 22) into the bushing with the shorter distance between the scratch marks on the top of the

large gear toward the *front* of the mechanism plate (away from the motor). Align one scratch mark (2, figure 27) with the mark on the tooth of the small pinion on the single-frame shaft as shown in figure 27.

(9) CLUTCH SHAFT COMPLETE.—Place a drop of oil (Oil, Castor, Specification No. AN-JJJ-0-316) on the clutch spring, spread the coils slightly with a small screwdriver and permit the oil to work into the shaft. Place the gear of the clutch shaft (14, figure 22) under the large eight-frame gear and insert the end of the shaft into the bearing. Align the scratch mark on the clutch shaft collar with the remaining scratch mark on the eight-frame shaft (3, figure 27). Do not permit the single- or eight-frame shafts to turn.

NOTE

Similar to the single-frame shaft complete, the clutch shaft complete for replacement is furnished without the pinion pinned to the shaft. Locate the pinion gear teeth with the teeth of the clutch shaft gear as in the note under paragraph (7) above, drill the hole and set the taper pin. These shafts are supplied in this manner to permit two fixed gears to be meshed with the teeth of two separate gears.

(10) WORM GEAR BRACKET COMPLETE.—Attach the worm gear bracket complete (6, figure 22) to the mechanism plate with the two screws (10) and lock washers and nuts (5).

(11) WORM SHAFT COMPLETE WITH GEAR.—Place the end of the worm shaft (7, figure 22) in the plate bearing and mesh the worm gear on the shaft with the worm gear (6) mounted in the bracket.

(12) GOVERNOR COMPLETE.—Set the governor shaft of the governor (17, figure 22) in its bearing so that the small pinion on the end of the assembly meshes with the large clutch shaft gear (14). Replace any washers which may have been removed during disassembly. End play of the governor shaft must be adjusted after the mechanism top and bottom plates are assembled.

NOTE

Place one drop of oil (Oil, Gyro Instrument Lubricating, Specification No. AN-0-4) on each shaft at bearing contact.

b. MECHANISM TOP PLATE ASSEMBLY.

(1) BUSHINGS AND STUDS. (See figure 24.)

(a) Attach the following bushings with three rivets each.

1. Crankshaft bushing, front (15).
2. Eight-frame bushing, front (16).
3. Single-frame bushing, front (6).
4. Motor spring shaft bushing, front (13).
5. Magazine lock bushing (10).

(b) For alignment and reaming refer to NOTE under paragraph 4. (1) (a) and Table No. 3.

(c) Rivet the following studs to the inside of the mechanism top plate.

1. Six front plate studs (14).
2. Signal device disk stud (12).
3. Two guide pins for the signal hammer.
4. Shoulder rivet for signal hammer.

(d) Rivet the following studs to the outer side of the mechanism top plate.

1. Magazine stop stud (11).
2. Magazine lock shoulder rivet (5).

NOTE

In all cases the studs and rivets must be accurately attached or the two mechanism plates will not fit together.

(2) SIGNAL PLATE AND SIGNAL HAMMER COMPLETE. (See figure 24.)

(a) Attach the signal plate (8) to the two brackets (9) with the two signal plate studs, first placing one felt washer over the studs between the brackets and the signal plate.

(b) Rivet the two signal plate brackets to the top mechanism plate with two small rivets in each bracket.

(c) Place the spring of the signal hammer complete between the two guide pins and the lever of the signal hammer over the signal hammer stud. Place the washer over the stud and peen the stud head. Be sure the lever actuates freely.

(3) SIGNAL DEVICE DISK COMPLETE. (See figure 24.)

(a) Replace the tension washer over the stud. Place the actuating spring (3) in position over the hub of the signal device disk with the ends of the spring in the grooves of the disk levers. Lower the disk over the stud and locate the slot in the tension spring to fit the pin in the disk.

(b) Place the washer (1) over the stud on top of the disk and peen the stud head.

(4) SHUTTER GEAR BOX COMPLETE. (See figure 25.)

(a) Attach the governor brake lever complete

(4) to the shutter gear box, inserting the brake lever spring (6) between the flanges of the lever and over the shoulder screw (5).

(b) Assemble the magazine locking lever (2) and the locking lever spring (3) to the shutter gear box with the shoulder screw (1). Place the short end of the spring down toward the box casting and hook the long end beneath the offset in the locking lever.

(c) Place the tension washer (8) over the square end of the shutter operating shaft and attach the operating lever complete (9) with the screw (10).

NOTE

If the operating handle complete bends quite easily, replace it with the newer type constructed of hardened steel.

(d) If the shutter gear box casting has raised machined shoulders at the three points of attachment to the mechanism plate, no washers are necessary. If these machined shoulders are not present, place a .003-inch washer between the box and the plate at the three points of attachment. Be sure that one end of the brake lever spring extends toward the rear end of the plate and the other end is beneath the brake lever, forcing the brake lever away from the plate.

NOTE

If a new shutter gear box is used for replacement, a new (left-hand thread) shutter screw (9, figure 19) must be used.

(5) CHAMBER LOCKING DEVICE CONNECTING SHAFT.—Place the tension washer over the hole in the plate and the coil spring (1, figure 20) over the shaft. Insert the end of the shaft through the hole and attach the cam (3) with the retaining screw.

c. ASSEMBLING MECHANISM TOP AND BOTTOM PLATES.

(1) Temporarily assemble the two mechanism plates by lowering the top plate onto the bottom plate. Fit all the shafts into the top plate bushings and secure the plates together with the six screws (3, figure 21).

(2) Check every shaft for end play which should be held to approximately .003 inch. End play on the governor shaft should be held to .001 or .002 inch. If necessary, separate the plates and insert the proper shims.

d. TIMING MECHANISM.

(1) Attach the winding crank and wind the motor several turns to bring the stop on the single-frame shaft against the notch in the stop lever as shown (1, figure 27).

(2) Separate the mechanism plates at the front end just enough to disengage the shutter and clutch gears.

(3) Set the shutter operating lever at the "OPEN" position. Attach the marked chamber to the mechanism, place the front shutter blade (10, figure 19) on the shutter shaft, and set the blade according to the pencil mark on the gear box and chamber front. Then lower the top plate into position so that the two shutter gears mesh. Be sure to hold the shutter blade in the correct position during this operation.

(4) Tighten the six mechanism plate screws.

e. INSTALLING NEW SHUTTER BLADES.

(1) The rear shutter blade (11, figure 19) is supplied as a replacement part without the shutter gear (15) attached. Ream out the hole in the shutter so that the gear will easily drop from the hole. Then with the shutter operating lever at "OPEN" and tension on the mechanism motor, place the new gear and blade over the shaft. See that the gear meshes with the gear in the gear box, then turn the blade until it is in line with the previously made pencil marks.

(2) With the blade and gear in proper position, swage the gear collar just enough to maintain the correct position, then carefully remove the two parts and make the swage permanent.

(3) With a fine file or stone, smooth the face of the blade and ream the bearing surface of the gear.

(4) Set the mechanism speed at "8" and adjust the blades for clearance. During this adjustment, bend the blades away from the gear box so that when the front is attached, further adjustment can be made by bending the blades away from the front. To observe the blades in movement slower than provided at speed "8," attach the small crank to the single-frame shaft, lock the operating button, and permit the mechanism to turn slowly by means of the crank. Remove the blades before further reassembly.

NOTE

For further adjustment after the front has been attached, refer to section VI, paragraph v.

f. STARTING LEVER LINK.—Insert the starting lever link (13, figure 22) into the guide and attach the end of the lever to the shutter operating lever with the screw (5, figure 21).

g. BRAKE LEVER BRACKET.—Attach the brake lever bracket to the mechanism top plate with the two screws (1, figure 21).

h. SINGLE-FRAME SHAFT DRIVE COUPLING COMPLETE.

(1) Turn the single-frame shaft until the large end of the taper pin hole is on the top side of the shaft. A small mark on the shaft indicates the larger hole.

(2) Place the drive coupling (5, figure 20) on the shaft with the large taper-pin hole up. Then fit the special brass tubing insert (Tool No. 39) over the coupling, replace the taper pin, tap it in, and remove the tubing.

NOTE

The drive coupling is constructed with one engaging pin on the rim of the coupling while the other pin is located approximately 1/16 inch from the rim. Before operating the camera, check to see that the engaging pin on the rim is toward the *rear* of the mechanism when the camera is in the normal off position.

i. ADJUSTING SIGNAL DEVICE DISK AND MOTOR TENSION.

(1) Attach the large winding crank to the mechanism and wind the motor spring until it is tight. Turn the signal device disk when necessary, to allow further winding of the motor.

(2) When the motor spring is wound as tightly as it will go without too much force (approximately 39 turns), set the signal device disk so that the stop stud on the motor gear will engage the notch on the disk just *below* the large sector. Operate the starting lever on the front of the mechanism until the motor has run for about ¾ turn of the large motor gear.

(3) Then set the disk so that the stop stud on the gear will engage the notch just *above* the large sector. The signal device disk will then be set correctly and the motor tension properly adjusted.

j. ADJUSTING SPEED OF MECHANISM.

(1) With the speed indicator dial set at "16," wind up the motor. Attach the 1½-inch coiled spring (Tool No. 46) to the eight-frame shaft so that it extends at right angles to the end of the shaft.

(2) Temporarily attach a *loaded* film chamber (test film) to the mechanism.

(3) Start the mechanism running and count the revolutions of the eight-frame shaft as indicated by the spring being rotated at the end of the shaft.

(4) The shaft should revolve 20 to 22 times in 10 seconds.

(5) Readjust the governor speed, if necessary, by resetting the adjusting nut (4, figure 21) on the end of the speed adjusting screw.

(6) Loosen the Allen setscrew in the nut, make the adjustment and tighten just the *one* setscrew on the *top* of the nut (toward the top of the camera mechanism).

(7) If it is necessary to make a slight adjustment in speed after the camera has been completely reassembled, remove the cap screw (6, figure 20) in the top of the case, loosen the setscrew, and move the adjusting nut. This adjustment will be very slight.

(8) In some instances, replacing the governor may necessitate relocation of the white dots on the control plate. Make the adjustment at speed "16" as described above. Then, after the etched control plate has been attached, make the following checks and locate the new dots according to the setting of the speed indicator knob.

(a) For speed "8"—20 to 23 revolutions of "EIGHT-FRAME" shaft in 20 seconds.

(b) For speed "16"—20 to 22 revolutions of "EIGHT-FRAME" shaft in 10 seconds.

(c) For speed "24"—6 ft. of film in 10 seconds.

(d) For speed "32"—8 ft. of film in 10 seconds.

(e) For speed "64"—8 ft. of film in 5 seconds.

NOTE

The speed can be set correctly at the previous location of speed "8." Then relocate the remaining dots, and if necessary remove the stop pin so that the speed indicator dial can be turned far enough to reach the 64 frames-per-second position. Place a new stop pin in the plate.

k. SINGLE PICTURE LEVER KNOB AND CRANK RELEASE.

(1) Place the fiber washer (12, figure 22) over the single picture lever knob. (If the knob was removed for any reason, place it on the single picture lever *before* the washer is replaced.)

(2) Replace the crank release (11).

l. REPLACING MECHANISM IN CASE.

(1) With the mechanism held in one hand and the case in the other, insert the end of the starting lever through the hole in the case. Then fit the gear box into the slot in the case. Be sure the shutter operating lever is in position to enter the cutaway in the case.

(2) Secure the mechanism in place with the five retaining screws (2, figure 21).

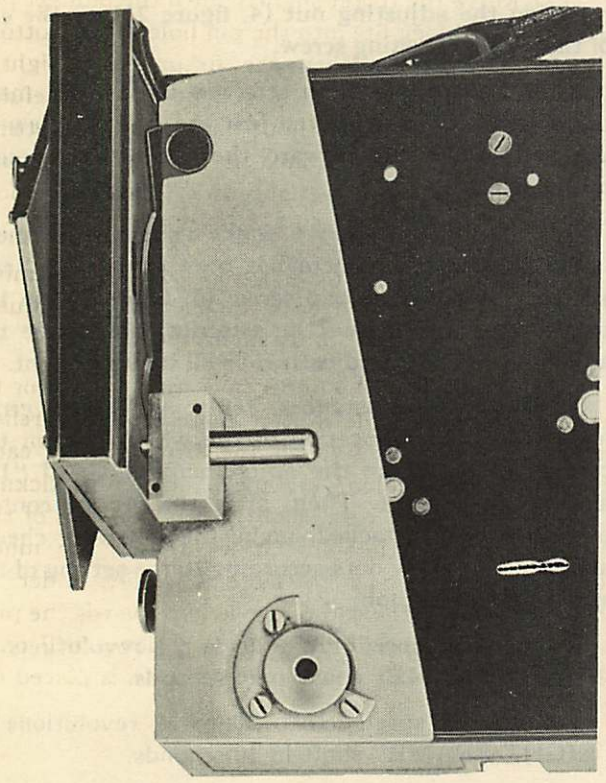


Figure 28—Front Alignment Tool in Position

m. FOOTAGE INDICATOR DIAL. (See figure 20.)

(1) With the footage indicator dial, shoulder screw, sleeve, spring washer, and flat washer held upside down in one hand, turn the camera so that the upper edge will be down.

(2) Place the footage indicator dial and parts in the recess in the top of the case and give the screw a turn to catch the threads. Turn the camera back with the top edge up and tighten the footage indicator dial retaining screw (4).

n. CHAMBER LOCKING LEVER WITH BUTTON.—Attach the chamber locking lever (2, figure 20) to the locking device shaft with the retaining screw.

o. STARTING BUTTON AND STARTING LEVER GUIDE.—Reassemble the starting lever guide (13, figure 19) to the front of the camera with the three screws. Attach the button (14) to the end of the starting lever with the taper pin. Support the button when replacing the pin.

p. SPEED INDICATOR DIAL.—Replace the speed indicator dial (7, figure 20) with the index mark in a position corresponding to "8" on the etched control plate. Secure it in place with the retaining screw.

q. FRAME COUNTER WINDOW COMPLETE.—Place the window with frame (1, figure 20) in position on the control plate. Put the control plate in position on the mechanism and then turn the window frame until the black pointer on the window is directly opposite a division mark on the frame counter dial. Remove the control plate without changing the position of the window. Place the plate, face down, on a flat surface and if no flange-setting tool is available, tap the inner flange of the window until the window frame is secure in the control plate. The frame must be set sufficiently to prevent turning in the plate hole.

r. ETCHED CONTROL PLATE.—Reassemble the etched control plate to the side of the camera by means of the four small and two large screws.

s. SHUTTER.

(1) Press the starting button, run the motor a second or two and release the button. This is to make sure that the mechanism stop on the single-frame shaft comes up against the stop lever.

(2) Set the shutter operating lever to the "OPEN" position. Place the rear (11, figure 19) and front (10) shutter blades in position in the shutter shaft according to the pencil mark previously made.

(3) Secure the blades in place with the retaining screw.

NOTE

For attaching new shutter blades see section VI, paragraph e.

t. FRONT COMPLETE. (See figure 19.)

(1) Replace the finder cover plate slide assembly (5) in the front with the stud extending in.

(2) Attach the finder cover in position with the three small screws (7).

(3) Screw the finder cover button (6) into the hole of the plate slide assembly.

u. TURRET GUIDE PLATE TO FRONT. (See figure 19.)

(1) Place the reflex finder lens (8) over the edge of the plate beneath the finder cover button.

(2) Replace the lens locating spring (4) in position over the cutout in the turret guide plate and while holding the reflex finder lens in place, lower the front plate into position on the turret guide plate. Turn the assembly over and replace the four screws (2) in the corners of the turret guide plate. Check to see that the finder lens operates correctly. A small lever in the center of the front will close the finder after it has been opened.

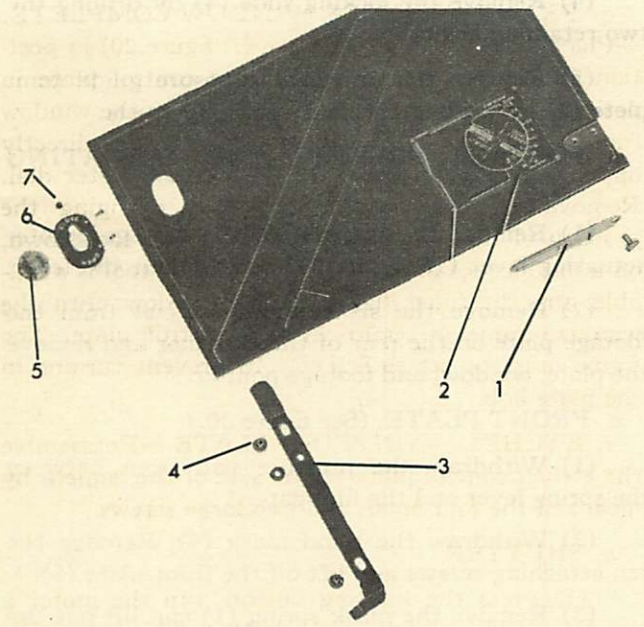


Figure 29—Cover Complete—Exploded View

Index No.	Nomenclature	Index No.	Nomenclature
1	Sliding Lever Complete	5	Knob—Cover latch
2	Universal Exposure Guide Complete	6	Plate—Lock indicator
3	Slide—Locking	7	Stud—Cover lock knob locating
4	Rivet		

(3) Loosely attach the front complete to the front of the camera with the four screws (1). Be careful not to damage the shutter during replacement.

v. ALIGNMENT OF FRONT.

(1) Place the turret aligning tool (No. 45) on the top mechanism plate so that the bushing on the fixture fits over the mechanism drive coupling, and the fixture block with pin rests against the back of the front complete as shown in figure 28. Be sure the top end of the fixture plate is snug against the top edge of the front.

(2) Move the turret slightly until the plunger pin in the fixture block fits into the pin hole in the bottom edge of the turret. With the fixture held tightly against the turret in this exact position, carefully secure the four screws without disturbing the setting of the assembly as determined by the fixture. Be sure the attaching screws are tightened. If they are not, the focus of the camera will be affected.

(3) Run the camera at speed "8" to determine the clearance of the shutter in the front. Make adjustments of the blades to obtain silent operation.

(4) Open the reflex finder and start the motor to see that the pin on the shutter blade closes the reflex finder. This pin may touch the trip lever at each revolution of the blade making a noticeable ticking sound. If this is the case, slightly bend the end of the lever away from the pin. Or if there is too much clearance the pin may not close the reflex finder, in which case, bend the end of the lever towards the pin. Adjustment of this reflex finder trip lever will only be necessary when a new front complete is placed on the mechanism.

w. FILM GATE STOP PLATE.

(1) After the shutter blades have been adjusted for smooth and quiet operation, very carefully slide the film gate stop plate (12, figure 19) between the front and the camera case with the milled-out part of the plate toward the shutter.

(2) As a final test for shutter clearance, attach a film chamber and listen for blade interference while the camera is running at speed "8." The clearance between the front and the shutter blades, and between the stop plate and shutter blades is very slight. Considerable adjustment is usually necessary when new blades, a new front, or a new stop plate is installed.

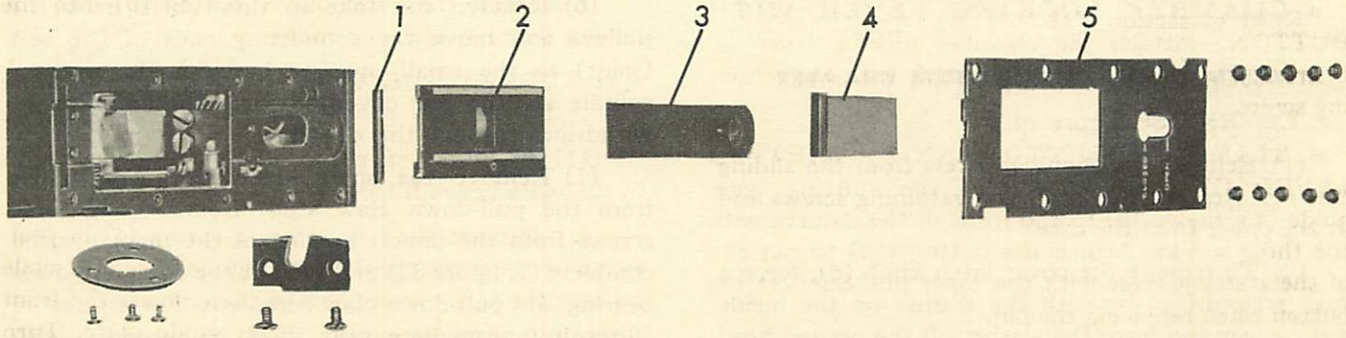


Figure 30—100-Foot Film Chamber—Front Exploded

Index No.	Nomenclature	Index No.	Nomenclature	Index No.	Nomenclature
1	Spring—Mask	3	Slide—Aperture	5	Plate—Front
2	Gate—Film	4	Mask—Blind		

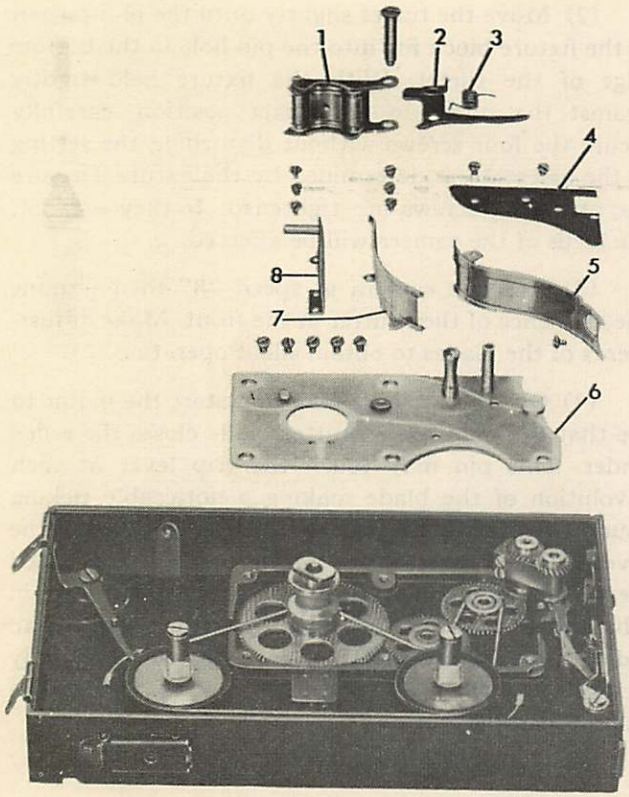


Figure 31—100-Foot Film Chamber—Guides and Plates Exploded

Index No.	Nomenclature	Index No.	Nomenclature
1	Sprocket Clamp Complete	5	Shoe—Film
2	Lever—Brake	6	Plate—Sprocket gear cover
3	Spring—Brake lever	7	Gate—Curved film
4	Cover—Gear	8	Guide—Film

x. WINDING CRANKS, FILM CHAMBER, AND LENSES.—Attach the large and small winding cranks to the camera. Attach the film chamber, and assemble the lenses to the lens turret.

NOTE

After reassembly, do not operate the camera until the minimum tests have been made. Refer to section VII.

5. DISASSEMBLY OF 100-FOOT FILM CHAMBER.

a. COVER. (See figure 29.)

(1) Remove the shoulder screw from the sliding lever (1). Remove the four hinge retaining screws and lift the cover from the case.

(2) To remove the cover latch knob (5), force a small screwdriver beneath the washer on the inside of the cover and force the washer off the peened head of the knob stud. Removal of the knob will release the cover lock knob locating stud (7).

(3) Remove the lock indicator plate (6) by drilling the two attaching rivets.

(4) Remove the locking slide (4) by drilling the two retaining rivets.

(5) Remove the universal exposure guide complete (2) by drilling the four retaining rivets.

b. FOOTAGE POINTER AND ACTUATING LEVER.

(1) Remove the screw from the footage pointer actuating lever (16, figure 32) and lift out the lever.

(2) Remove the six retaining screws from the footage plate on the rear of the chamber and remove the plate, window, and footage pointer.

c. FRONT PLATE. (See figure 30.)

(1) Withdraw the pressure pad from between the spring lever and the film gate.

(2) Withdraw the blind mask (4). Remove the ten attaching screws and lift off the front plate (5).

(3) Remove the mask spring (1) and lift out the film gate (2) with aperture slide (3).

d. FILM CHAMBER MECHANISM. (See figures 31 and 32.)

(1) Remove the two retaining screws and lift off the gear cover (4).

(2) Remove the remaining screw and the film shoe (5).

(3) Remove the large shoulder screw and lift off the sprocket clamp complete (1).

(a) Withdraw the shoulder screw to release the brake lever (2) and coil spring (3) from the sprocket clamp.

(4) Remove the three attaching screws from the film guide (8) and three screws from the curved film gate (7).

(5) Remove the five attaching screws and lift the sprocket gear cover plate (6) straight up and out.

(6) Remove the take-up drive belt from the pulleys and move the connecting ends of the belt (joint) to the small opening between the take-up spindle and the gear cover support. The joint can be withdrawn through this opening.

(7) Remove the small screw (2) and washer from the pull-down claw stud. Remove the three screws from the pinion bearing of the main bearing complete (1, figure 32) and lift out the complete main bearing and pull-down claw complete. The associated 58-tooth intermediate gear must be removed with the pinion bearing.

(8) Remove the attaching screw (5) to detach the pull-down claw complete (3) from the claw crankshaft.

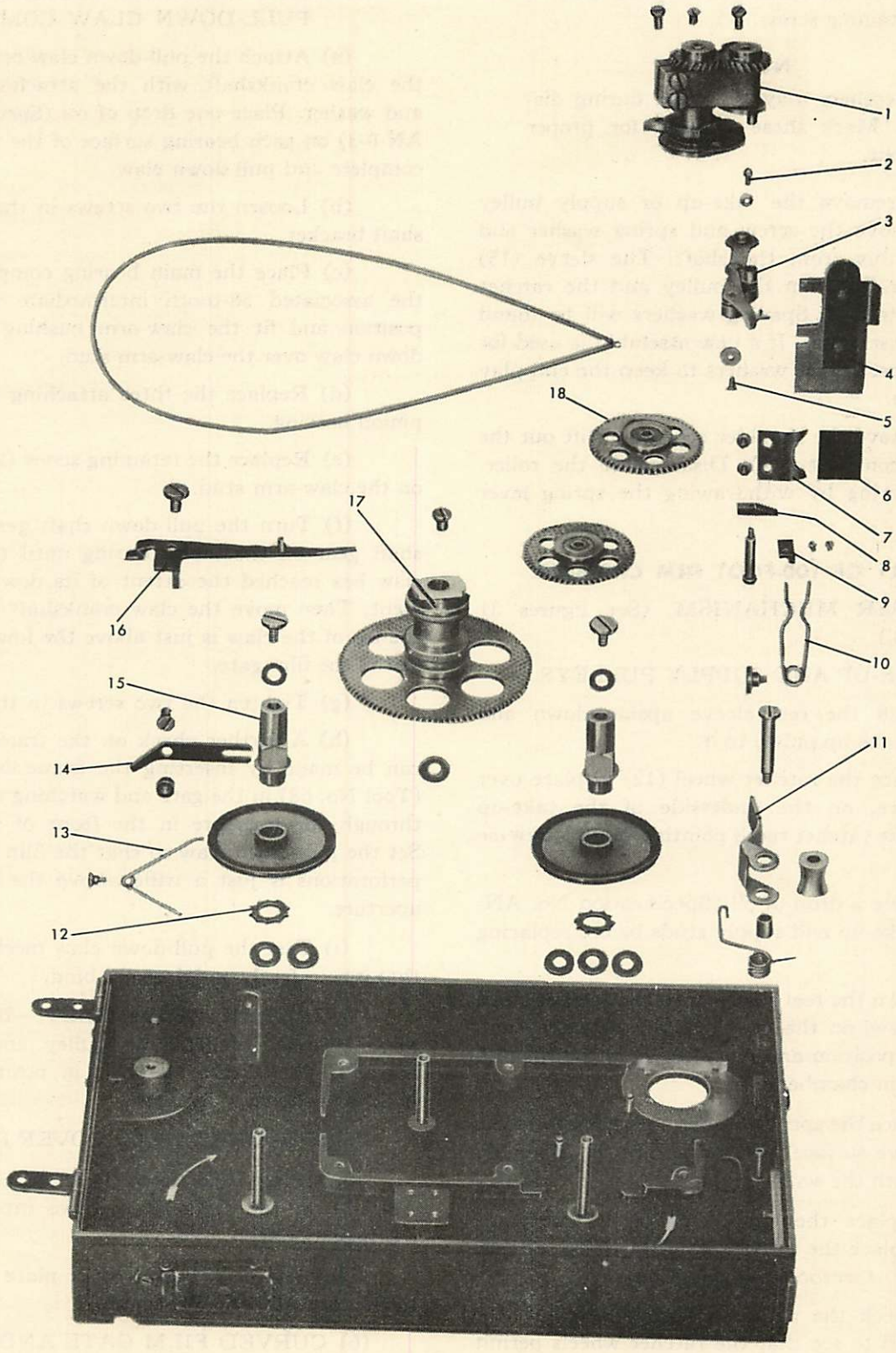


Figure 32—100-Foot Film Chamber—Mechanism Exploded

Index No.	Nomenclature
1	Main Bearing Complete
2	Screw
3	Pull-Down Claw Complete
4	Pad—Pressure
5	Screw
6	Strip—Cloth
7	Spring—Upper
8	Cam
9	Bracket—Gear cover
10	Spring—V-shaped
11	Lever—Spring
12	Wheel—Ratchet
13	Spring—Footage lever
14	Lever—Connecting
15	Sleeve—Reel
16	Lever—Footage pointer actuating
17	Sprocket Complete
18	Gear—Intermediate 58-tooth

(9) Remove the sprocket complete (17) by removing the retaining screw.

NOTE

Spacing washers may be found during disassembly. Mark these washers for proper replacement.

(10) To remove the take-up or supply pulley complete, remove the screw and spring washer and lift the assembly from the shaft. The sleeve (15) can be withdrawn from the pulley and the ratchet wheel (12) lifted off. Spacing washers will be found beneath the assemblies. If a new assembly is used for replacement, use spacer washers to keep the end play to a minimum.

(11) Remove the shoulder screw and lift out the spring lever complete (11). Disassemble the roller, sleeve, and spring by withdrawing the spring lever screw.

6. REASSEMBLY OF 100-FOOT FILM CHAMBER.

a. CHAMBER MECHANISM. (See figures 31 and 32.)

(1) TAKE-UP AND SUPPLY PULLEYS.

(a) Hold the reel sleeve upside down and assemble the take-up pulley to it.

(b) Place the ratchet wheel (12) in place over the reel sleeve, on the underside of the take-up pulley, with the ratchet teeth pointing in a *clockwise* direction.

(c) Place a drop of oil (Specification No. AN-0-3) on the take-up and supply studs before replacing the pulley.

(d) Turn the reel sleeve until the ratchet stops against the pawl on the pulley. Hold the pulley and sleeve in this position and place them on the take-up stud in the film chamber.

(e) Place the spring washer over the end of the sleeve (concave surface up) and secure the assembly to the stud with the screw.

(f) Replace the supply pulley in the same manner, but place the ratchet wheel so that the teeth point in a *counterclockwise* direction.

(g) Check the action of the pulleys for free movement and to see that the ratchet wheels permit the pulleys to turn in the right direction. Use spacer washers over the shaft to take up excessive end play.

(2) SPROCKET COMPLETE.—Attach the sprocket (17) to the sprocket shaft with the retaining screw. Use spacer washers over the shaft to eliminate excessive end play.

(3) MAIN BEARING COMPLETE AND PULL-DOWN CLAW COMPLETE.

(a) Attach the pull-down claw complete (3) to the claw crankshaft with the attaching screw (5) and washer. Place one drop of oil (Specification No. AN-0-3) on each bearing surface of the main bearing complete and pull-down claw.

(b) Loosen the two screws in the claw crankshaft bracket.

(c) Place the main bearing complete (1) with the associated 58-tooth intermediate gear (18) in position and fit the claw-arm bushing of the pull-down claw over the claw-arm stud.

(d) Replace the three attaching screws in the pinion bearing.

(e) Replace the retaining screw (2) and washer on the claw-arm stud.

(f) Turn the pull-down shaft gear and pinion shaft gear on the main bearing until the pull-down claw has reached the extent of its downward movement. Then move the claw crankshaft bracket until the tip of the claw is just above the lower end of the slot in the film gate.

(g) Tighten the two screws in the clamp.

(h) A further check on the frame-line setting can be made by inserting the frame-line check film (Tool No. 68) in the gate and watching the cross lines through the aperture in the front of the chamber. Set the pull-down claw so that the film area between perforations is just a trifle *above* the center of the aperture.

(i) Test the pull-down claw mechanism to see that it runs freely and does not bind.

(4) TAKE-UP DRIVE BELT.—Insert the belt joint between the take-up pulley and mechanism housing. Then place the belt in position over the pulleys as shown in figure 31.

(5) SPROCKET GEAR COVER PLATE.

(a) Place one drop of oil (Specification No. AN-0-3) on the studs of the two intermediate 58-tooth gears (18).

(b) Attach the gear cover plate (6, figure 31) to the case with the five screws.

(6) CURVED FILM GATE AND STRAIGHT GUIDE.—Attach the curved film gate (7) and straight film guide (8) with the six attaching screws. Be sure they clear the film reels and sprocket.

(7) SPROCKET CLAMP COMPLETE.—Assemble the spring (3), brake lever (2), and screw to the sprocket clamp (1) and attach the clamp to the

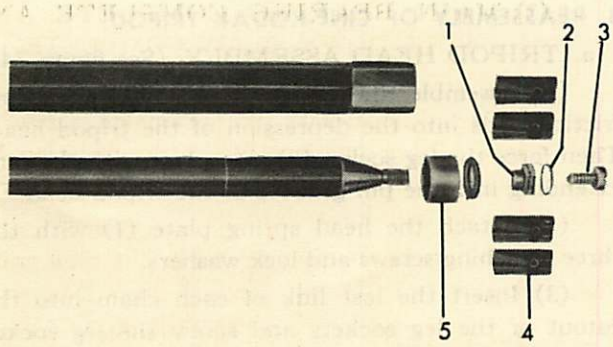


Figure 33—Tripod Leg Assembly—Exploded

Index No.	Nomenclature	Index No.	Nomenclature
1	Nut—Leg adjusting	4	Nut—Adjusting split
2	Clip—Spring	5	Ferrule
3	Screw—Leg retaining		

sprocket gear cover. Be sure the lower opening in the sprocket shoe fits over the shoulder on the stud screw so that the screw can be drawn down.

NOTE

Do not attach the gear cover or film shoe until the frame-line test has been made.

b. FOOTAGE POINTER AND ACTUATING LEVER.

(1) Insert the stud on the footage pointer through the opening in the case with the footage lever spring forcing the pointer to the "EMPTY" position.

(2) Replace the footage plate with window and attach with the six screws.

(3) Secure the actuating lever (16, figure 32) in place with the shoulder screw. Place one extending projection between the stud on the pointer and the footage lever spring. The projection on the end of the lever must be in front of the connecting lever. After assembling the actuating lever, check to see that the action of the pointer is correct.

c. FILM-GATE APERTURE SLIDE COMPLETE AND FRONT PLATE. (See figure 30.)

(1) Replace the aperture slide (3) in the film gate (2). Place the film gate in position on the front of the chamber case and insert the aperture slide stud through the forked spring within the case.

(2) Replace the mask spring (1) (curved side up) in the depression at the top of the case.

(3) Lay the front plate (5) over the film gate complete and secure it to the case with the 10 screws.

NOTE

After reassembly, make the tests in section VII before using the chamber.

7. DISASSEMBLY OF CINÉ-KODAK TRIPOD.

a. LEG ASSEMBLY. (See figure 33.)

(1) Loosen the screw (3, figure 34) on the leg socket (2) and withdraw the leg assembly.

(2) To disassemble the leg assembly, unscrew the leg ferrule (5, figure 33), give the round leg one-half turn counterclockwise and withdraw the inner round leg assembly. Catch the adjusting split nut (4) as the leg is withdrawn.

(3) Remove the leg retaining screw (3), leg adjusting nut (1), and spring clip (2). The ferrule ribbon can be removed from the ferrule by prying it out with the blade of a knife.

NOTE

Further disassembly of the inner round leg assembly is not recommended.

b. TRIPOD HEAD ASSEMBLY. (See figure 34.)

(1) Unscrew the pan screw (3, figure 35) and

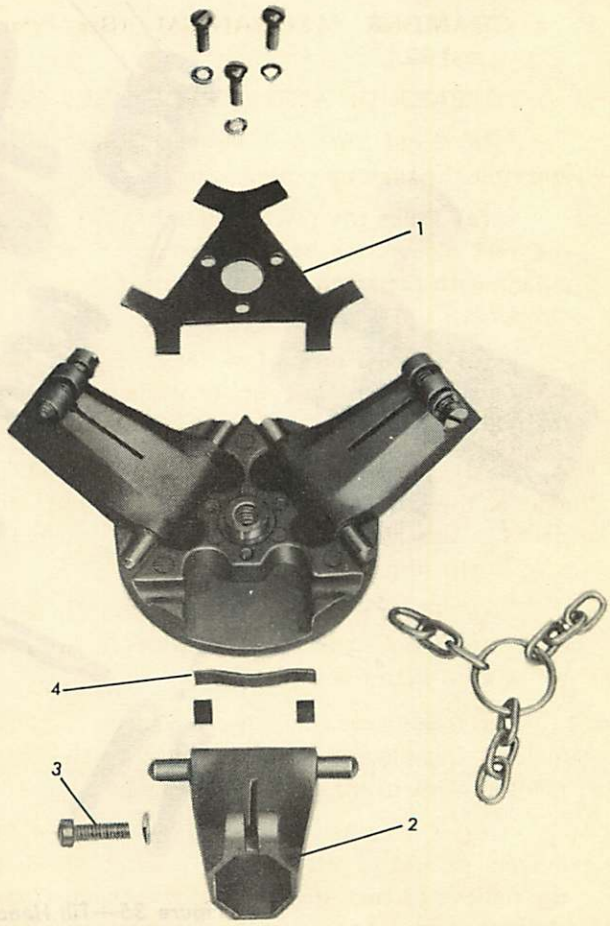


Figure 34—Tripod Head Assembly—Exploded

Index No.	Nomenclature	Index No.	Nomenclature
1	Plate—Head spring	3	Screw
2	Leg Socket with Insert	4	Spring—Leg

handle rod from the head assembly. Lift the tilt head assembly from the tripod head.

(2) Remove the head spring plate (1, figure 34) by removing the three attaching screws and washers.

(3) Withdraw the leg socket (2) from the tripod head and the leg spring (4) and the two spring friction pads will be free.

c. TILT HEAD ASSEMBLY. (See figure 35.)

(1) Unscrew the tilt adjusting screw (5) to remove the tripod pan head and the fiber and brass tilt friction washers (1 and 2).

(2) The tilt adjusting screw assembly can be disassembled by driving the adjusting screw pin (4) from the screw.

8. REASSEMBLY OF CINÉ-KODAK TRIPOD.

a. TRIPOD HEAD ASSEMBLY. (See figure 34.)

(1) Assemble the leg spring (4) and two spring friction pads into the depression of the tripod head. Then force the leg socket (2) into place with the pins extending into the pin grooves of the tripod head.

(2) Attach the head spring plate (1) with the three attaching screws and lock washers.

(3) Insert the last link of each chain into the cutout of the leg sockets and screw the leg socket screws (3) into place.

b. TILT HEAD ASSEMBLY. (See figure 35.)

(1) Assemble two brass friction washers (2) between three fiber friction washers (1) and insert the tilt adjusting screw (5) through the tripod tilt head,

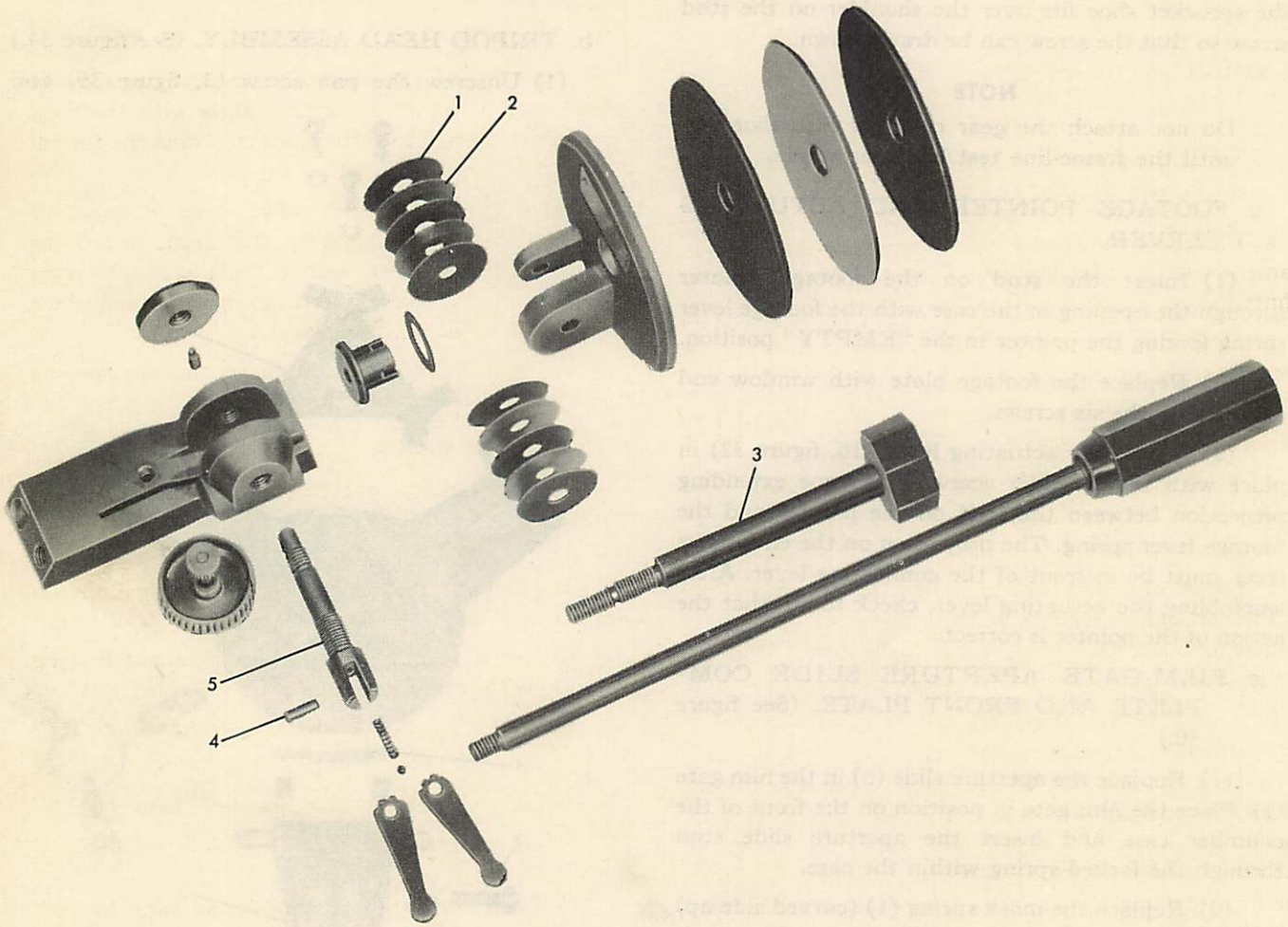


Figure 35—Tilt Head and Handle Assembly—Exploded

Index No.	Nomenclature
1	Washer—Fiber tilt friction
2	Washer—Metal tilt friction
3	Pan Screw with Knob
4	Pin—Adjusting screw
5	Screw—Tilt adjusting

group of five washers, tripod pan head, group of five washers, in that order. Turn the adjusting screw into the tilt nut.

(2) Place the pan friction washer assembly on the tripod pan head.

(3) Attach the tilt head assembly to the tripod head by turning the pan screw (3, figure 35) into the pan nut of the tripod head.

c. LEG ASSEMBLY. (See figure 33.)

(1) Screw the leg adjusting nut (1) onto the cone of the round leg and replace the leg retaining screw (3). Slip the spring clip (2) into the groove of the leg adjusting nut.

(2) Slide the leg ferrule (5) onto the round leg. Fit the four pieces of the adjusting split nut (4) around the cone to compress the spring clip. Holding the adjusting split nut in this position, insert the inner round leg assembly into the octagonal leg.

(3) Tighten the ferrule (5) on the end of the octagonal leg.

(4) Insert the end of the octagonal leg into the leg socket and tighten the leg socket screw.

SECTION VII
TEST PROCEDURE

1. VISUAL FOCUS CHECK.

NOTE

For making the tests described in this paragraph, use the chart shown in figure 36.

a. Place the camera on a sturdy tripod so that the camera lens is exactly 6 feet from the center of the chart.

b. Open the lens to *f*/1.9. Use the reflex finder and focus sharply on the center of the chart.

c. The reading on the focusing collar should be between 4¾ and 6, or on 6.

d. Then focus on points "B" above and below the center line. The reading on the focusing collar should be between 4½ and 6½.

e. Focus on points "A" to the left and to the right of the vertical center line. If the reading on the focusing collar is not above 8 or below 6, the visual focus is satisfactory.

f. If any of the above visual focus checks show unsatisfactory results, substitute a standard 25-mm *f*/1.9 lens for the one in use, and repeat the tests. After this additional check, if the focus is not within the limits prescribed above, the test indicates that the reflex finder mirror is out of adjustment. Replace the front complete with lens turret assembly. Do not attempt to disassemble the front complete.

2. REFLEX FINDER CHECK WITH FILM.

a. With the chart properly illuminated, set the lens opening at *f*/1.9 and locate the camera (on a tripod) so that the lens is 3 feet from the chart. Set the focus collar at 3 feet.

b. Look through the reflex finder and register the cross lines on the finder ground glass with the cross lines on the chart. Move the chart to obtain the correct line-up.

c. After the cross lines have been *accurately* aligned with the cross lines on the chart, record the chart numbers which are seen at the end of each cross line. This will represent the target area actually seen through the reflex finder.

d. Without moving the camera, set the lens opening at *f*/5.6 and expose a few frames of film.

3. FILM FOCUS CHECK.

a. Set the camera and tripod so that the lens is exactly 6 feet from the chart.

b. Set the lens opening at *f*/1.9 and the speed indicator dial at "16." Use normal daylight illumination.

c. Expose a few frames of film at the following settings on the focus scale:

(1) Two thirds of the distance from "4" to "6."

(2) At "6."

(3) At a point ½ the distance between "6" and "8."

(4) At "8."

(5) Then turn the focusing collar back to "6," moving the collar in one direction only, and expose a few frames at "6." Be very careful to stop at "6" so that it is not necessary to back up the collar.

d. Between each exposure and change of focus collar, cover the front of the lens with the hand and expose two frames with the "SINGLE-FRAME" knob.

e. Remove the exposed film in a darkroom and process it by hand as with ordinary roll film.

4. FRAME-LINE TEST.

a. Superimpose the strip of film for checking the frame-line (Tool No. 68) over a piece of the test-run film. Match the perforation holes of the test-run film with the frame-line check strip and look through the two pieces to see that the line inscribed on the check strip coincides with the frame line of the test-run film.

b. A tolerance of ± .004 is acceptable.

c. If the frame-line is not within the limits of the tolerance, adjust the pull-down claw to move the film in the proper direction. This adjustment is usually very slight and can be accomplished by *carefully* bending the tip of the pull-down claw.

d. The frame-line adjustment is very important, especially when several chambers are used interchangeably on the same camera or when film from different cameras is stripped together for projection. Uniform adjustment is essential.

5. REFLEX FINDER REGISTRATION CHECK.

a. With a magnifying glass, examine the film exposed during the reflex finder check in paragraph 2 above. Compare the figure at the top and bottom frame lines and at the inner edges of the film sprocket holes with the corresponding figures as seen through the reflex finder (see paragraph 2). The acceptable tolerance between these figures is 14 points. If the difference is greater than this, reset the front complete in a compensating direction, and repeat the checks.

b. If the vertical cross line of the chart is recorded on the film at a slant, the mirror of the reflex finder is out of adjustment. Replace the front complete.

6. FOCUS CHECKS.

Insert the strip of test film in a projector and check the focus at the various settings made in paragraph 3. Sharpest focus should be when the camera lens focus was set at 6 feet. It may also be sharp at 1/3 distance from 6 to 8 feet, but it should *not* be sharp for any of the other settings. If the original focus test at 6 feet is not exactly the same as the "return to 6 feet" (last exposure), there is backlash in the focusing mount. A new lens unit should be substituted.

7. STEADINESS TEST.

a. Load the film chamber with a 50-foot roll of Ciné-Kodak Panchromatic Film.

b. Set the camera up on a *secure* base with the camera lens 2 feet from the target picture. Use a picture with good detail including vertical and horizontal lines. Use any available means of lighting the target and set the lens opening of the camera in accordance with the light used.

c. Set the focus collar at 2 feet.

d. Identify each test to be run by a symbol held in front of the target. For example, for the single-frame exposure test, a small card marked with "SF" in large letters will serve to identify the section of film exposed in this manner.

e. Make the following exposures, exposing two blank frames between each test.

Speed Dial Setting	No. of Feet	Identifying Symbol
8	5	8
16	5	16
16	3	SF
24	5	24
32	5	32
64	10	64

f. Remember to increase the size of the lens opening as the camera speed is increased.

8. FADE-IN AND FADE-OUT TEST.

a. Set the camera speed dial at "16" and the shutter operating lever to "CLOSED."

b. Start the camera and slowly open the shutter during the running of 2½ feet of film.

c. Slowly close the shutter during the following 2½ feet.

d. With the shutter closed, run off the remainder of the film in the chamber.

e. Have the film processed in the usual manner.

9. ANALYSIS OF TESTS.

a. STEADINESS.—Project the roll of film watching particularly for sharp focus and steadiness. Unsteadiness, if present, will increase with the speed of the camera. For causes of unsteadiness, refer to section V, paragraph 4.

b. FLICKER.—When flicker is noticed on the single- and eight-frame-per-second tests it is probably due to slow starting of the mechanism caused by a binding in the camera or chamber mechanism. Check the chamber and mechanism separately to ascertain the source of trouble.

c. FADE-OUT AND FADE-IN.—This test should be steady and complete. An incomplete fade-in or fade-out indicates that the shutter blades are not correctly set. (Refer to section VI, paragraph 4. d.).

SECTION VIII
PARTS CATALOG INTRODUCTION

1. This Parts Catalog covers the Ciné-Kodak Special and Ciné-Kodak Tripod, manufactured by the Eastman Kodak Company, Rochester, New York.

2. Section IX, the Group Assembly Parts List, lists all major assemblies and their detail parts, indented in the order which indicates their relation to the main assembly.

3. Section X, the Numerical Parts List, lists the parts in numerical order and the page or pages of the Group Assembly List on which the respective parts appear.

4. The asterisk (*) indicates those parts which are not recommended for individual replacement.

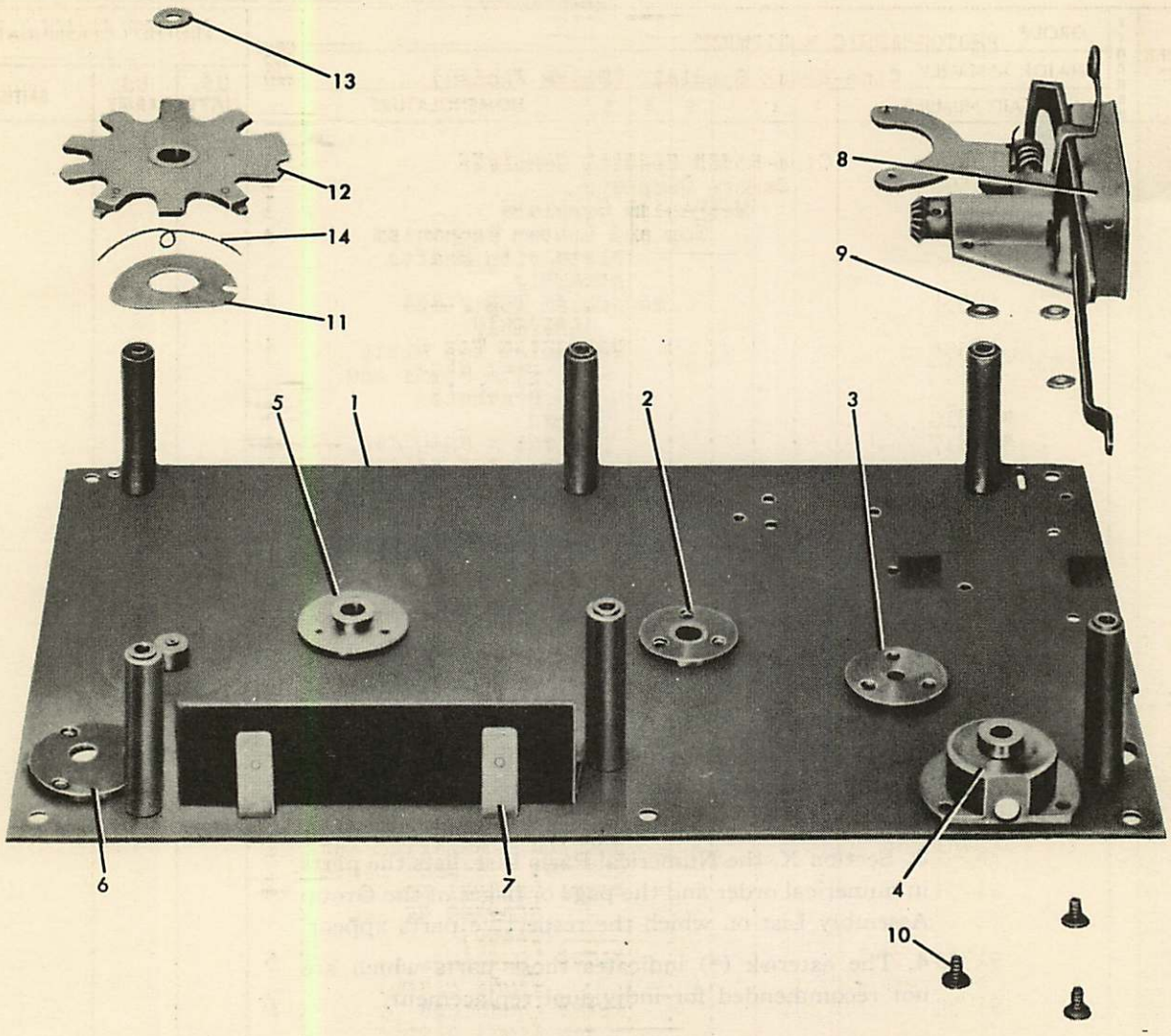


Figure 37—Mechanism Top Plate—Parts Exploded from Bottom

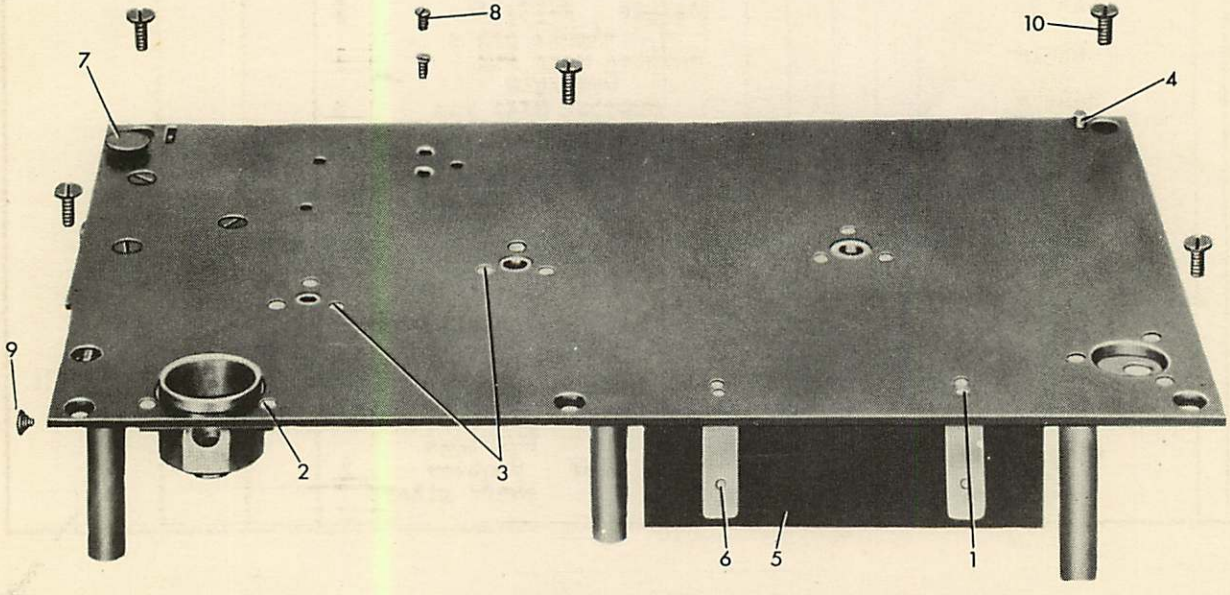


Figure 38—Mechanism Top Plate—Parts Exploded from Top

SECTION IX—GROUP ASSEMBLY PARTS LISTS

GROUP PHOTOGRAPHIC EQUIPMENT

MAJOR ASSEMBLY Cine-Kodak Special (Black Finish)

FIG. NO.	INDEX NO.	STOCKED	PART NUMBER	1	2	3	4	5	6	NOMENCLATURE	UNITS PER ASSY	PROPERTY CLASSIFICATION U.S. NAVY	U.S. ARMY	BRITISH
			66899	Cine-Kodak Special Complete							1			
			66596		Camera Complete						1			
			68563			Mechanism Complete					1			
			68562				Top and Bottom Mechanism Plate with Shafts Assembly				1			
			68556					Mechanism Top Plate Assembly			1			
37	1		68554						Mechanism Top Plate with Studs and Brackets		1			
			*65810							Stud	1			
			*65817							Rivet - Shoulder, for signal hammer	1			
			*65820							Pin - Guide, for signal hammer spring	2			
			*65874							Plate - Front mechanism	1			
			*65876							Stud - Front plate	6			
37	2		65826							Bushing - Winding crankshaft, front	1			
37	3		65841							Bushing - Eight-frame crankshaft, front	1			
37	4		65856							Bushing - Single-frame shaft, front	1			
37	5		65870							Bushing - Motor spring shaft, front	1			
37	6		65799							Bushing - Magazine lock	1			
37	7		65823							Bracket - Signal plate	2			
38	1		91734							Rivet (signal plate bracket to top plate)	4			
38	2		91749							Rivet (bushings to front plate)	9			
38	3		91750							Rivet (bushings to front plate)	6			
38	4		65806							Stud - Magazine stop	1			
38	5		65821							Plate - Signal	1			
38	6		65822							Stud - Signal plate	2			
			65824							Washer - Felt, for signal plate	2			
37	8		68518							Shutter Gear Box Complete	1			
			*68512							Shutter Gear Box Assembly	1			
			*68511							Shutter Shaft and Gear Assembly	1			
			*65704							Shaft - Shutter	1			
			*65709							Pin - Locating, for gear	1			
			*65710							Gear (sq hd)	1			
43	1		65711							Gear - Rear shutter blade	1			
			*68508							Box - Shutter gear, with bushings	1			
			*65705							Gear - Shutter shaft miter	1			

Figure 39—Shutter Gear Box Complete—Exploded

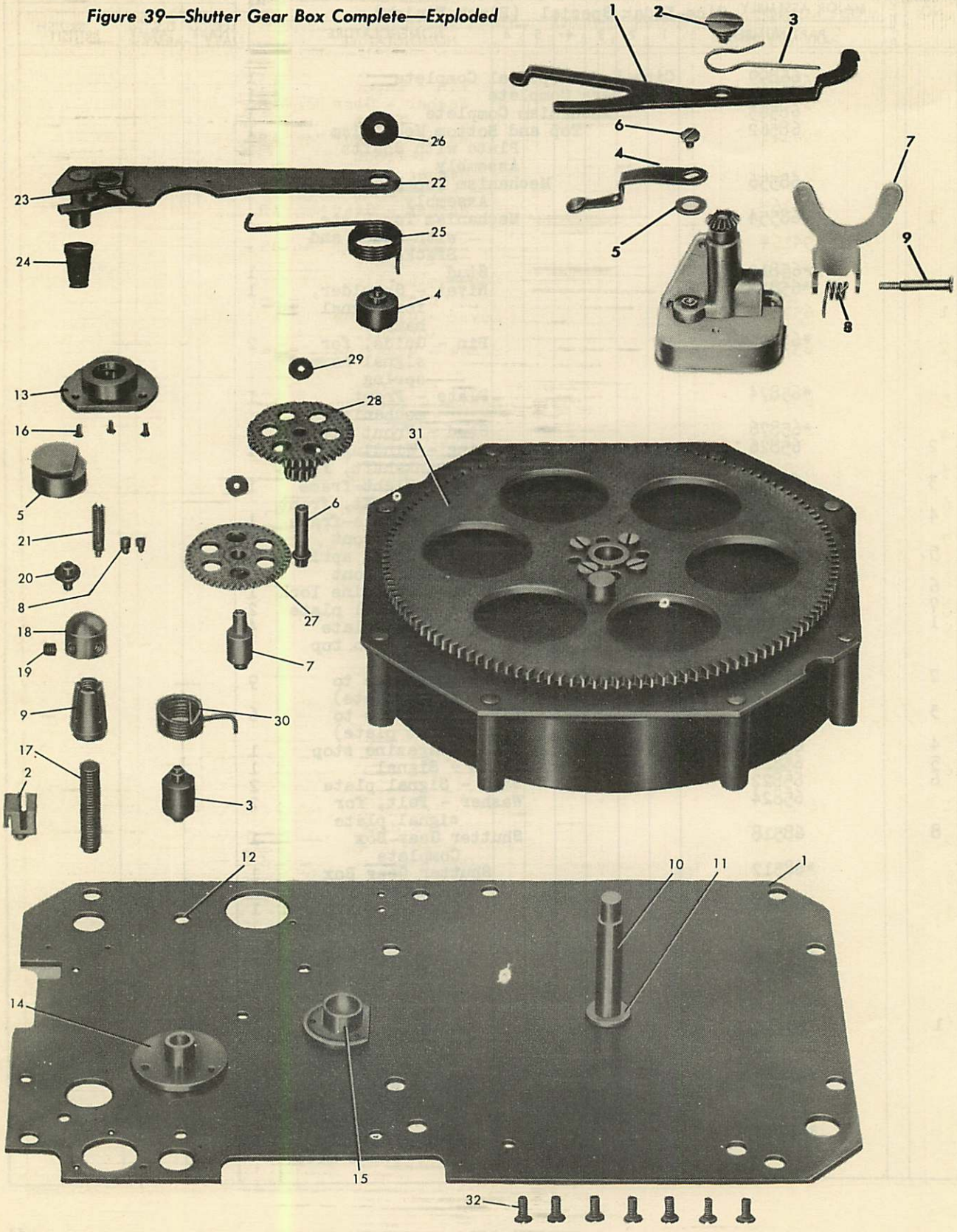


Figure 40—Mechanism Bottom Plate—Studs and Bushings Exploded

SECTION IX—GROUP ASSEMBLY PARTS LISTS

GROUP PHOTOGRAPHIC EQUIPMENT

MAJOR ASSEMBLY Cine-Kodak Special (Black Finish)

FIG. NO.	INDEX NO.	STOCKED	PART NUMBER	1	2	3	4	5	6	NOMENCLATURE	UNITS PER ASSY	PROPERTY CLASSIFICATION U.S. NAVY	U.S. ARMY	BRITISH
			*65707							Pin - Taper	1			
			*94160							Washer - Gear box, front	AR			
			*94161							Washer - Gear box, front	AR			
			*94162							Washer - Gear box, front	AR			
			*94163							Washer - Gear box, front	AR			
			*94164							Washer - Gear box, front	AR			
			*68517							Connecting Link Complete	1			
39	1		65733							Lever - Magazine locking	1			
39	2		65734							Screw - Magazine locking lever shoulder	1			
39	3		65735							Spring - Locking lever	1			
39	4		68516							Operating Lever Complete	1			
39	5		65896							Washer - Spring tension	1			
39	6		91736							Screw - Operating lever to box	1			
39	7		68513							Governor Brake Lever Complete	1			
			*65698							Lever - Brake	1			
			*65701							Insert - Cork	2			
39	8		65700							Spring - Brake lever	1			
39	9		65699							Screw - Shoulder (brake lever)	1			
			*65724							Gear - 23-Tooth	1			
			*65725							Stud	1			
			*65726							Washer (shutter gear box)	1			
37	9		53482							Washer (gear box to plate)	3			
37	10		91736							Screw (gear box to top plate)	3			
37	11		65811							Washer - Spring (signal device disk)	1			
37	12		68539							Signal Device Disk Complete	1			
37	13		65743							Washer (signal device disk stud)	1			
37	14		65814							Spring - Actuating	1			
			*68540							Signal Hammer Complete	1			
			*97196							Washer (signal hammer lever)	1			
			*65726							Washer (signal hammer stud)	1			
38	7		65807							Rivet - Magazine lock shoulder	1			
			68559							Mechanism Bottom Plate Assembly	1			
			68558							Mechanism Bottom Plate with Brackets & Studs	1			
40	1		65875							Plate - Rear mechanism	1			

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SECTION IX—GROUP ASSEMBLY PARTS LISTS

GROUP PHOTOGRAPHIC EQUIPMENT

MAJOR ASSEMBLY Cine-Kodak Special (Black Finish)

FIG. NO.	INDEX NO.	STOCKED	PART NUMBER	1	2	3	4	5	6	NOMENCLATURE	UNITS PER ASSY	PROPERTY CLASSIFICATION U.S. NAVY	U.S. ARMY	BRITISH
40	2		65732							Bracket - Starting lever	1			
40	3		65742							Stud - Stop lever	1			
40	4		65754							Stud - Single picture lever	1			
40	5		65655							Pin - Lever guide	1			
40	6		65782							Stud - Pinion	1			
40	7		65778							Stud - 45-Tooth gear	1			
40	8		65794							Pin - Stop (signal lever with flat spring)	2			
40	9		65796							Bushing - Adjusting screw	1			
40	10		65868							Shaft - Motor spring	1			
40	11		91747							Washer (motor spring shaft)	1			
40	12		65878							Bearing - Governor shaft	1			
40	13		65843							Bushing - Single-frame shaft, bottom	1			
40	14		65842							Bushing - Eight-frame shaft, bottom	1			
40	15		65827							Bushing - Crankshaft, bottom	1			
40	16		36133							Rivet (bushings)	9			
40	17		65795							Screw - Adjusting	1			
40	18		65797							Nut - Adjusting	1			
40	19		54609							Setscrew (adj. nut) No. 5-40 x 1/8-in. Bristo hol hd	4			
40	20		65901							Stud - Signal spring lever	1			
40	21		65904							Stud - Signal spring guide	1			
			65905							Pin - Stop (speed indicator dial)	2			
41	1		68557							Shutter Signal Lever with Flat Spring Complete	1			
41	2		65907							Spring - Tension (signal lever)	1			
41	3		65726							Washer (signal lever stud)	1			
40	22		68523							Single Picture Lever Complete	1			
			*65751							Lever - Single picture	1			
			*65752							Stud - Single picture lever	1			
			*65757							Lever - Single picture stop	1			
			*65758							Stud - Single picture stop lever stop	1			
			*65759							Pin - Single picture lever stop, with slot	1			
			*65760							Pin - Single picture lever stop	1			
40	23		65761							Spring - Single picture lever	1			

SECTION IX—GROUP ASSEMBLY PARTS LISTS

GROUP PHOTOGRAPHIC EQUIPMENT

MAJOR ASSEMBLY Cine-Kodak Special (Black Finish)

FIG. NO.	INDEX NO.	STOCKED	PART NUMBER	1	2	3	4	5	6	NOMENCLATURE	UNITS PER ASSY	PROPERTY CLASSIFICATION U.S. NAVY	U.S. ARMY	BRITISH
40	24		65890							Knob - Single picture lever	1			
40	25		65755							Spring (return on single picture lever)	1			
40	26		65743							Washer - Single picture lever stud	1			
40	27		68530							Gear - 45-Tooth, with bushing assembly	1			
40	28		68531							Gear - 45-Tooth, with pinion assembly	1			
40	29		65726							Washer - 45-Tooth gear stud	2			
41	4		68522							Stop Lever Complete	1			
40	30		65744							Spring - Stop lever	1			
41	5		65743							Washer (stop lever stud)	1			
41	6		68534							Worm Gear Bracket Complete	1			
41	7		AN936-A2							Lockwasher - Worm gear bracket	2			
41	8		55285							Nut - Worm gear bracket	2			
41	9		76402							Screw - Worm gear bracket	2			
41	10		68527							Governor Complete	1			
			93837							Shim - Governor shaft (.003-in.)	AR			
			58025							Shim - Governor shaft (.0053-in.)	AR			
			93838							Shim - Governor shaft (.005-in.)	AR			
			93839							Shim - Governor shaft (.010-in.)	AR			
			91746							Shim - Governor shaft (.0015-in.)	AR			
41	11		68529							Clutch Shaft Complete	1			
			58025							Shim - Clutch shaft (.0053-in.)	2 AR			
			91746							Shim (.0015-in.)	2 AR			
			65707							Pin - Taper (miter gear to clutch shaft)	1			
41	12		68533							Worm Shaft Complete with Gear	1			
41	13		68541							Crankshaft Complete	1			
			93846							Shim (.003-in.)	AR			
			93847							Shim (.005-in.)	AR			
			93848							Shim (.010-in.)	AR			
41	14		68545							Eight-Frame Shaft Complete	1			
			93840							Shim (.003-in.)	2 AR			
			93841							Shim (.005-in.)	2 AR			
			93842							Shim (.010-in.)	2 AR			
41	15		68549							Single-Frame Shaft Complete	1			
			*65658							Pin - Taper	2			
44	1		65707							Pin - Taper	1			
			*65855							Crankshaft - Single-frame	1			
			*65857							Gear - 16-Tooth	1			
			*65858							Stop - Single-frame shaft	1			
44	2		68548							Single-Frame Shaft Drive Coupling Complete	1			
			93843							Shim (.003-in.)	3 AR			
			93844							Shim (.005-in.)	3 AR			
			93845							Shim (.010-in.)	3 AR			

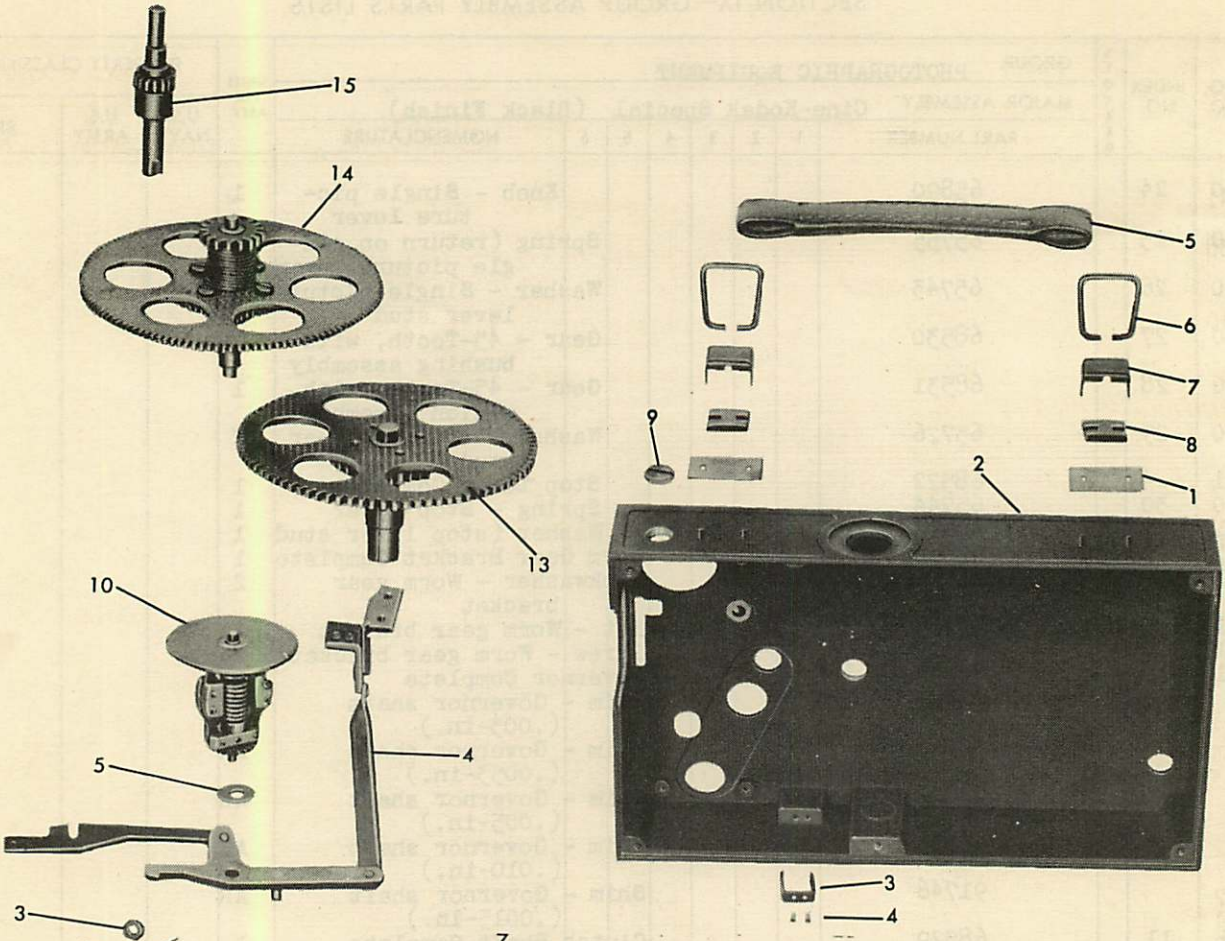


Figure 42—Case Covered, with Carry Handle—Exploded

Figure 41—Mechanism Bottom Plate—Gears Exploded

SECTION IX—GROUP ASSEMBLY PARTS LISTS

GROUP PHOTOGRAPHIC EQUIPMENT

MAJOR ASSEMBLY Cine-Kodak Special (Black Finish)

FIG. NO.	INDEX NO.	STOCKED	PART NUMBER	1	2	3	4	5	6	NOMENCLATURE	UNITS PER ASSY	PROPERTY CLASSIFICATION U.S. NAVY	U.S. ARMY	BRITISH
41	16		91738							Screw (top mech. plate to bottom)	6			
38	8		91737							Screw (brake lever bracket to front mech. plate)	2			
40	31		68553							Motor Spring Housing Complete with Spring	1			
40	32		91738							Screw (motor spring housing to rear mech. plate)	7			
44	3		65802							Washer - Spring (magazine locking shaft)	1			
44	4		65803							Spring - Coil	1			
44	5		65800							Shaft - Locking device	1			
44	6		65801							Cam - Magazine locking	1			
44	7		65877							Screw (magazine locking cam to shaft)	1			
41	17		65730							Link - Starting lever	1			
38	9		65731							Screw - Shoulder, for link	1			
41	18		68564							Crank Release Lock Slide with Knob	1			
			*65908							Knob - Locking slide	1			
			*65911							Slide - Locking	1			
43	2		68509							Rear Shutter Blade Complete	1			
43	3		68510							Front Shutter Blade Complete	1			
43	4		65708							Screw - Shutter	1			
			68566							Case Covered with Carry Handle & Tripod Bushing	1			
42	1		35429							Strip - Handle bracket reinforcement	2			
42	2		65696							Camera Case	1			
44	8		65839							Stud - Large crank snap	1			
42	3		65852							Spring - Small crank locating	1			
42	4		91742							Screw (spring to case)	2			
			65879							Bushing - Tripod	1			
42	5		68361							Carry Handle Complete	1			
			*33790							Thread	1			
			*39694							Reinforcement - Handle, long	1			
			*39695							Filler - Handle, long	1			
			*39932							Filler - Handle, short	1			
			*47932							Reinforcement - Handle, short	1			
			*54640							Covering - Handle	1			
42	6		91753							Loop - Handle	2			
42	7		91752							Bracket - Handle	2			
42	8		92796							Support	2			
42	9		93129							Screw - Cap	1			
38	10		91738							Screw (front mech. plate to case)	5			
41	19		65753							Washer - Fibre (single picture button)	1			
43	5		65738							Guide - Starting lever	1			
43	6		91735							Screw - Starting lever guide	3			
43	7		65736							Button - Starting	1			
43	8		65658							Pin - Taper (starting button)	1			
			68507							Front Complete with Lens Turret Assembly	1			
			68505							Front Complete	1			
			*65659							Front	1			
43	9		68501							Finder Cover Plate Slide Assembly	1			

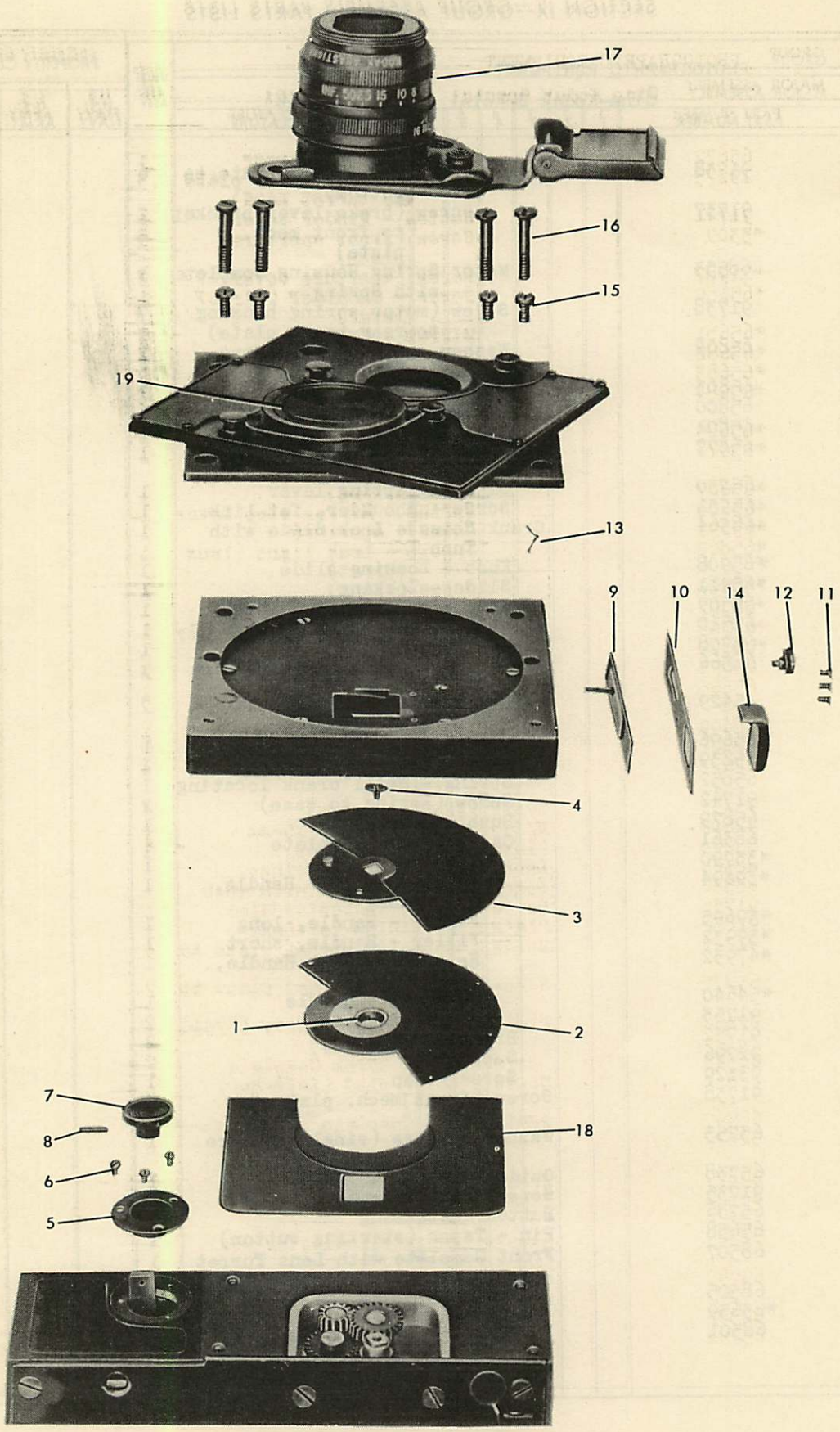


Figure 43—Front Complete—Exploded

SECTION IX—GROUP ASSEMBLY PARTS LISTS

GROUP PHOTOGRAPHIC EQUIPMENT

MAJOR ASSEMBLY Cine Kodak Special (Black Finish)

FIG. NO.	INDEX NO.	STOCKED	PART NUMBER	1	2	3	4	5	6	NOMENCLATURE	UNITS PER ASSY	PROPERTY CLASSIFICATION U.S. NAVY	U.S. ARMY	BRITISH
43	10		65672							Plate - Finder cover	1			
43	11		19273							Screw (finder cover plate to turret head)	3			
43	12		91741							Button - Finder cover	1			
			*3309							Screw (front aperture plate)	5			
			*11987							Screw (aperture cover)	2			
			*65680							Screw - Shoulder (mirror lever)	1			
			*65681							Mirror - Metal	1			
			*65682							Screw - Mirror	2			
			*65683							Rivet	1			
			*65684							Spring - Coil (mirror lever)	1			
			*65685							Lever - Mirror stop	1			
			*65686							Screw - Shoulder (mirror stop lever)	1			
			*65687							Stud (spring)	1			
			*65688							Spring - Mirror stop lever	1			
			*65691							Cover - Aperture	1			
			*65889							Insert - Leak light (lens turret)	1			
			*68400							Screw (front)	1			
			*68502							Mirror Lever Assembly	1			
			*68503							Front Cover Plate Assembly	1			
			*83872							Pin - Stop, for mirror	1			
			65693							Velvet Ribbon (front)	2			
43	13		65666							Spring - Locating (finder lens)	1			
43	14		68499							Reflex Finder Lens Mounted	1			
			*68506							Lens Turret Assembly	1			
43	15		65663							Screw (turret guide plate to front)	4			
43	16		91739							Screw (front to case)	4			
43	17		92600							F/1.9 Lens Complete, 25-mm	1			
43	18		65694							Plate - Film gate stop	1			
43	19		68560							Lens Hole Cap with Springs	1			
44	9		68536							Speed Indicator Dial with Knob	1			
44	10		91736							Screw - Speed indicator dial	1			
44	11		92856							Plate - Mechanism (etched)	1			
44	12		91742							Screw (mechanism etched plate to case)	4			
44	13		65877							Screw (mechanism etched plate to case, large)	2			
			92858							Plate - Turret (U.S. Navy Bureau of Aeronautics)	1			
44	14		68543							Large Winding Crank Complete	1			
44	15		65838							Screw - Motor wind (left-hand thread)	1			
44	16		68547							Small Crank Complete	1			
44	17		68537							Chamber Locking Lever with Button	1			
44	18		65877							Screw - Chamber locking lever	1			
44	19		68561							Frame Counter Dial Window Complete	1			
			65789							Sleeve (footage indicator dial assembly)	1			
			65790							Washer - Spring (footage indicator dial)	1			
44	20		68535							Footage Indicator Dial with Knob	1			
44	21		65792							Screw - Footage indicator knob	1			

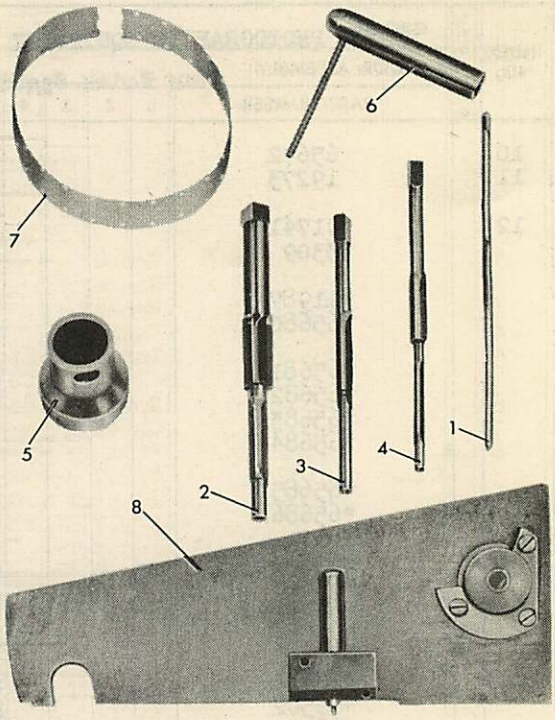


Figure 44—External Parts Exploded from Case

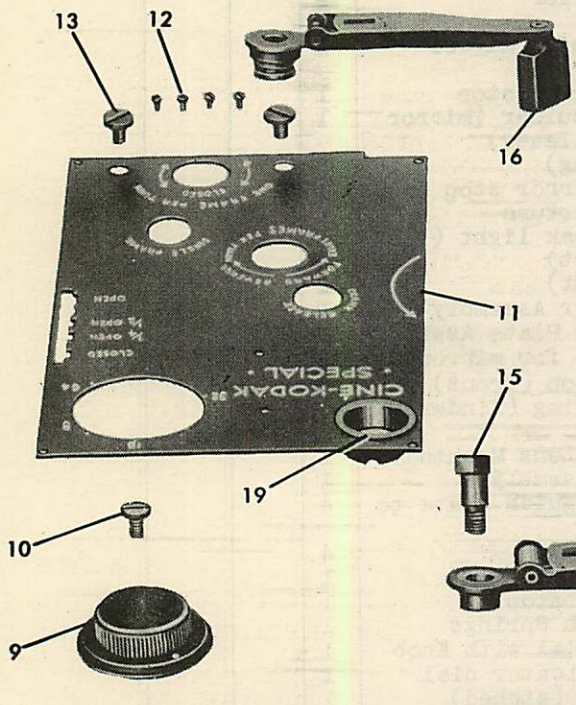
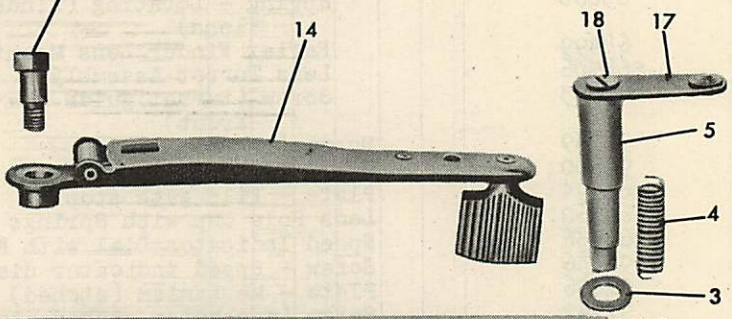
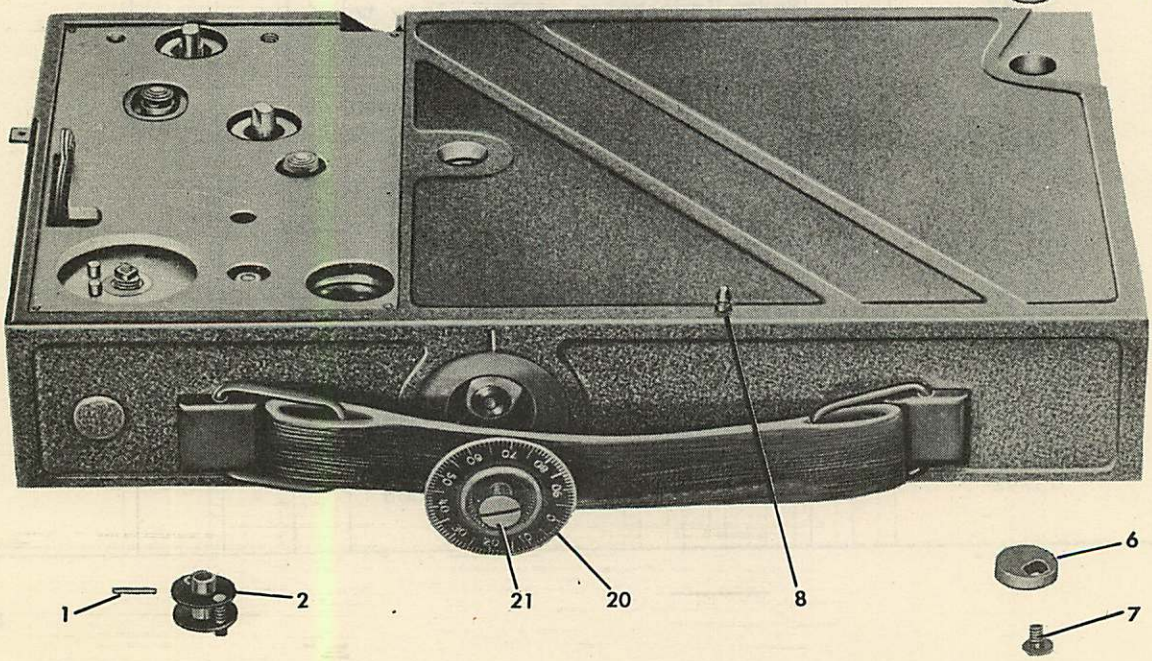


Figure 45—Tools





SECTION IX—GROUP ASSEMBLY PARTS LISTS

FIG. NO.	INDEX NO.	STOCKED	PART NUMBER	1	2	3	4	5	6	NOMENCLATURE	UNITS PER ASSY	PROPERTY CLASSIFICATION U.S. NAVY	U.S. ARMY	BRITISH
			GROUP PHOTOGRAPHIC EQUIPMENT											
			MAJOR ASSEMBLY Cine-Kodak Special (Black Finish)											
			68638							Washer (camera mech., large)	2			
			68639							Washer (camera mech., small)	1			
			93703							Mask Set Complete in Case and Envelope	1			
45	1		68562-A							Reamer	1			
45	2		68562-B							Reamer	1			
45	3		68562-C							Reamer	1			
45	4		68562-D							Reamer	1			
45	5		39							Insert - Special brass tubing, for drive coupling	1			
45	6		46							Spring - Speed adjusting	1			
45	7		68							Check Film - Frame line	1			
45	8		45							Fixture - Front locating	1			
			61374							F/2.7 Kodak Anastigmat Lens, 15-mm	AR			
			68688							Adapter - Cine-Kodak wide angle lens	AR			
			58177							F/2.7 Kodak Anastigmat Lens, 63-mm	AR			
			68686							Adapter - Cine-Kodak telephoto lens	AR			
			55379							F/4.5 Kodak Anastigmat Lens, 152-mm	AR			
			J25421							Ring - Adapter, Series VI, 1-9/16 in. (39.5 mm) for 15-mm and 152-mm lenses	AR			
			J25417							Ring - Adapter, Series VI, 1-5/16 in. (33 mm) for 63-mm lens	AR			
			9903							W-CK-3 Filter	AR			
			53869							Carrying Case - Cine-Kodak tripod	1			
			R-1							Carrying Case - Regular Cine-Kodak	1			

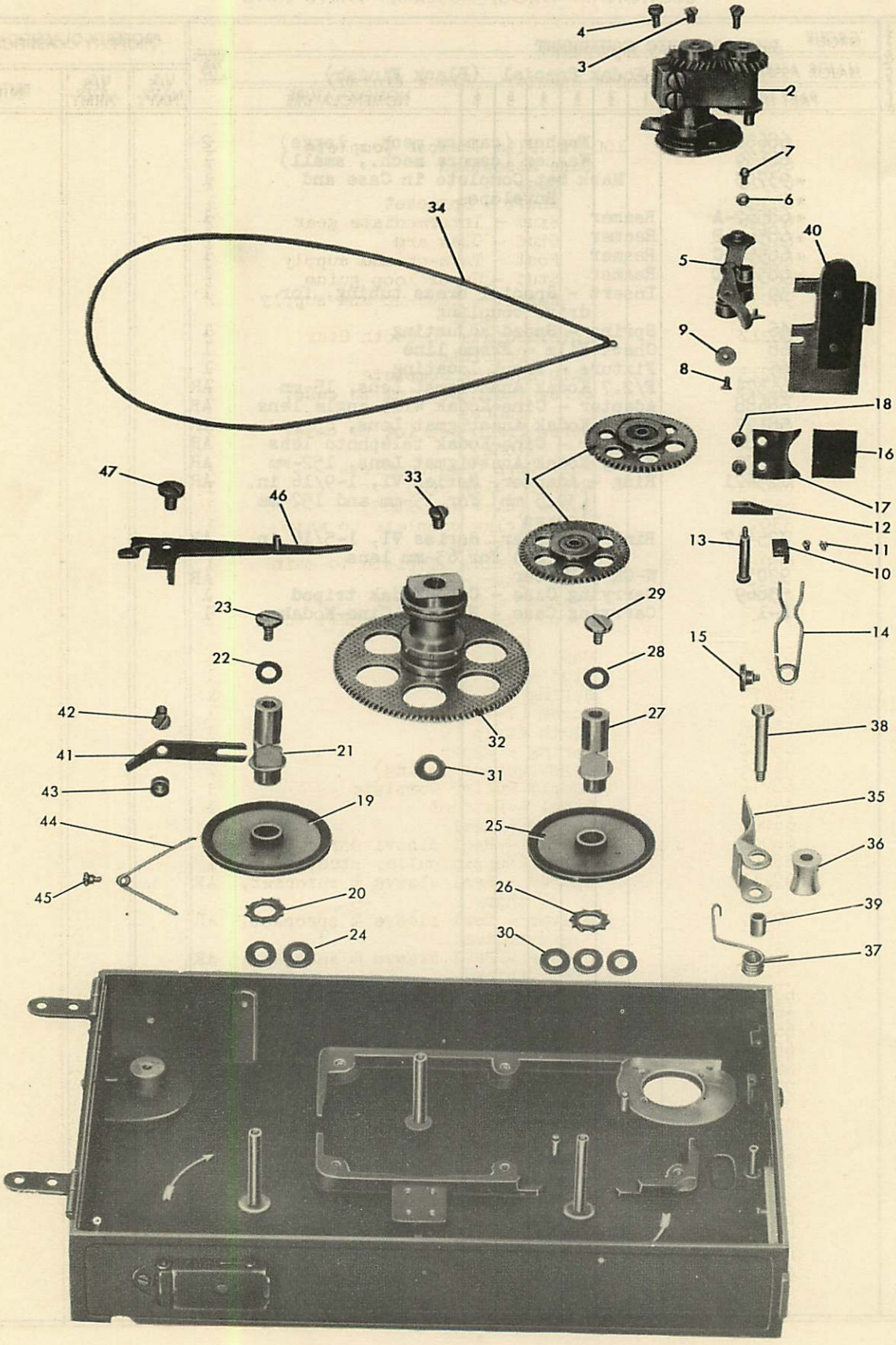


Figure 46—100-Foot Film Chamber—Partial Explosion

SECTION IX—GROUP ASSEMBLY PARTS LISTS

GROUP: PHOTOGRAPHIC EQUIPMENT
MAJOR ASSEMBLY: Cine-Kodak Special (Black Finish)

FIG. NO.	INDEX NO.	STOCKED	PART NUMBER	1	2	3	4	5	6	NOMENCLATURE	UNITS PER ASSY	PROPERTY CLASSIFICATION U.S. NAVY	U.S. ARMY	BRITISH
			66052		100-Ft. Film Chamber Complete						1			
			68219			Case Assembled					1			
			*65926				Case				1			
			*65990				Shaft - Sprocket				1			
			*65996				Stud - Intermediate gear				2			
			*66040				Stud - Claw arm				1			
			*66003				Post - Take-up and supply				2			
			*66050				Stud - Upper loop guide				1			
			94091				Washer - Take-up and supply post				2			
46	1		68212			Intermediate 58-Tooth Gear Complete					2			
46	2		68213			Main Bearing Complete					1			
46	3		66049			Screw (main bearing to case, short)					1			
46	4		66000			Screw (main bearing to case, long)					2			
46	5		68214			Pull-Down Claw Complete					1			
46	6		66041			Washer (claw arm)					1			
46	7		66042			Screw (claw arm stud)					1			
46	8		3309			Screw (claw complete to main bearing)					1			
46	9		66038			Washer (claw complete to main bearing)					1			
46	10		66045			Bracket - Gear cover					1			
46	11		91742			Screw (gear cover bracket to case)					2			
46	12		65975			Cam					1			
46	13		65976			Stud - Cam					1			
46	14		65978			Spring - V					1			
46	15		65977			Screw (V-spring)					1			
46	16		66020			Cloth Strip					1			
46	17		65960			Spring - Upper					1			
46	18		91766			Screw (upper spring)					2			
46	19		68216			Supply Pulley Complete					1			
46	20		46156			Wheel - Ratchet					1			
46	21		66006			Sleeve - Reel					1			
46	22		66008			Washer - Reel sleeve spring					1			
46	23		66004			Screw (supply pulley stud)					1			
46	24		97116			Spacer - Reel sleeve & sprocket, thin					AR			
46	24		97117			Spacer - Reel sleeve & sprocket, medium					AR			
46	24		97118			Spacer - Reel sleeve & sprocket, thick					AR			
46	25		68217			Take-Up Pulley Complete					1			
46	26		46156			Wheel - Ratchet					1			
46	27		66006			Sleeve - Reel					1			
46	28		66008			Washer - Spring					1			
46	29		66004			Screw (take-up pulley stud)					1			
46	30		97116			Spacer - Reel sleeve & sprocket, thin					AR			
46	30		97117			Spacer - Reel sleeve & sprocket, medium					AR			
46	30		97118			Spacer - Reel sleeve & sprocket, thick					AR			
46	31		94091			Washer (sprocket shaft)					1			
46	32		68211			Sprocket Complete					1			
46	33		91738			Screw (sprocket)					1			
46	34		66010			Belt - Take-up drive					1			
47	1		68209			Sprocket Gear Cover Plate Complete					1			

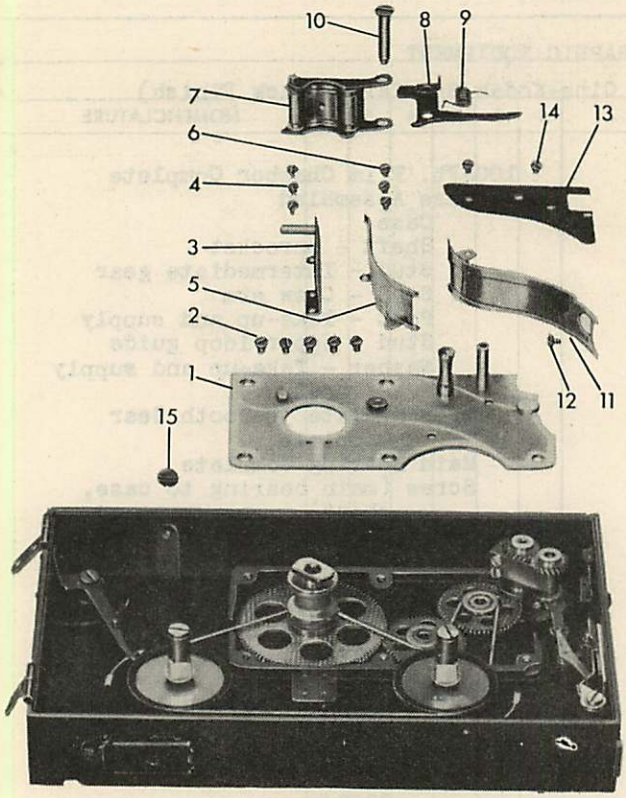


Figure 47—100-Foot Film Chamber—Partial Explosion

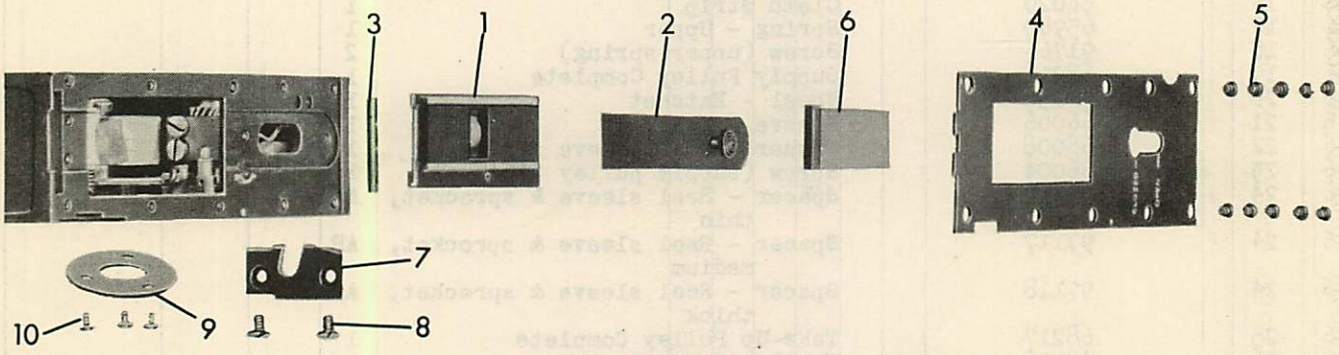


Figure 48—100-Foot Film Chamber—Front Exploded

SECTION IX—GROUP ASSEMBLY PARTS LISTS

GROUP PHOTOGRAPHIC EQUIPMENT

MAJOR ASSEMBLY Cine-Kodak Special (Black Finish)

FIG. NO.	INDEX NO.	STOCKED	PART NUMBER	1	2	3	4	5	6	NOMENCLATURE	UNITS PER ASSY	PROPERTY CLASSIFICATION U.S. NAVY	U.S. ARMY	BRITISH
47	2		91738							Screw - Gear cover plate	5			
47	3		68215							Straight Film Guide Complete	1			
47	4		91766							Screw - Film guide	3			
47	5		65967							Gate - Curved film	1			
47	6		91766							Screw - Film gate	3			
47	7		68210							Sprocket Clamp Complete	1			
47	8		65987							Lever - Brake	1			
47	9		65988							Spring - Brake lever	1			
47	10		65981							Screw (sprocket clamp)	1			
46	35		65962							Lever - Spring	1			
46	36		65964							Roller	1			
46	37		65966							Spring - Spring lever	1			
46	38		65963							Screw - Spring lever	1			
46	39		65965							Sleeve	1			
47	11		66026							Shoe - Film	1			
47	12		91766							Screw - Film shoe	1			
47	13		66027							Cover - Gear	1			
47	14		91766							Screw - Gear cover	2			
46	40		68207							Pressure Pad Complete	1			
47	15		65946							Screw - Sliding lever shoulder	1			
46	41		65947							Lever - Connecting	1			
46	42		65948							Screw - Connecting lever shoulder	1			
46	43		65949							Collar - Connecting link	1			
46	44		65952							Spring - Footage lever	1			
46	45		66019							Screw (spring to case)	1			
46	46		68204							Footage Pointer Actuating Lever Complete	1			
46	47		65951							Screw - Footage lever shoulder	1			
48	1		68206							Film Gate Complete	1			
48	2		68208							Aperture Slide Complete	1			
48	3		65933							Spring - Mask	1			
48	4		91772							Plate - Front	1			
48	5		91774							Screw (front plate)	10			
48	6		68218							Blind Mask Complete	1			
49	1		66018							Window - Footage	1			
49	2		92864							Plate - Footage (U.S. Bureau of Aeronautics)	1			
49	3		91742							Screw (footage plate)	6			
49	4		68205							Footage Pointer Complete	1			
49	5		42150							Finder Eyelet Assembled Complete	1			
49	6		66012							Screw - Finder assembly	3			
			97127							Hinge Complete	2			
49	7		65939							Hinge - Cover	1			
49	8		65940							Hinge - Case	1			
49	9		65942							Pin - Hinge	1			
49	10		66013							Screw - Hinge	8			
			19225							100-Ft. Spool Assembled	1			
			38303							50-Ft. Spool Assembled with Dummy Film	1			
48	7		65970							Plate - Locking	1			
48	8		91736							Screw - Locking plate	2			
48	9		65969							Bushing - Locking	1			
48	10		91735							Screw - Locking bushing	3			
			68224							Cover Complete	1			
			*66016							Bushing - Cover	2			
50	1		91771							Plate - Lock indicator	1			
50	2		93252							Rivet (lock plate to cover)	2			
50	3		77337							Universal Exposure Guide Complete	1			
50	4		92631							Rivet (exposure guide to cover)	4			

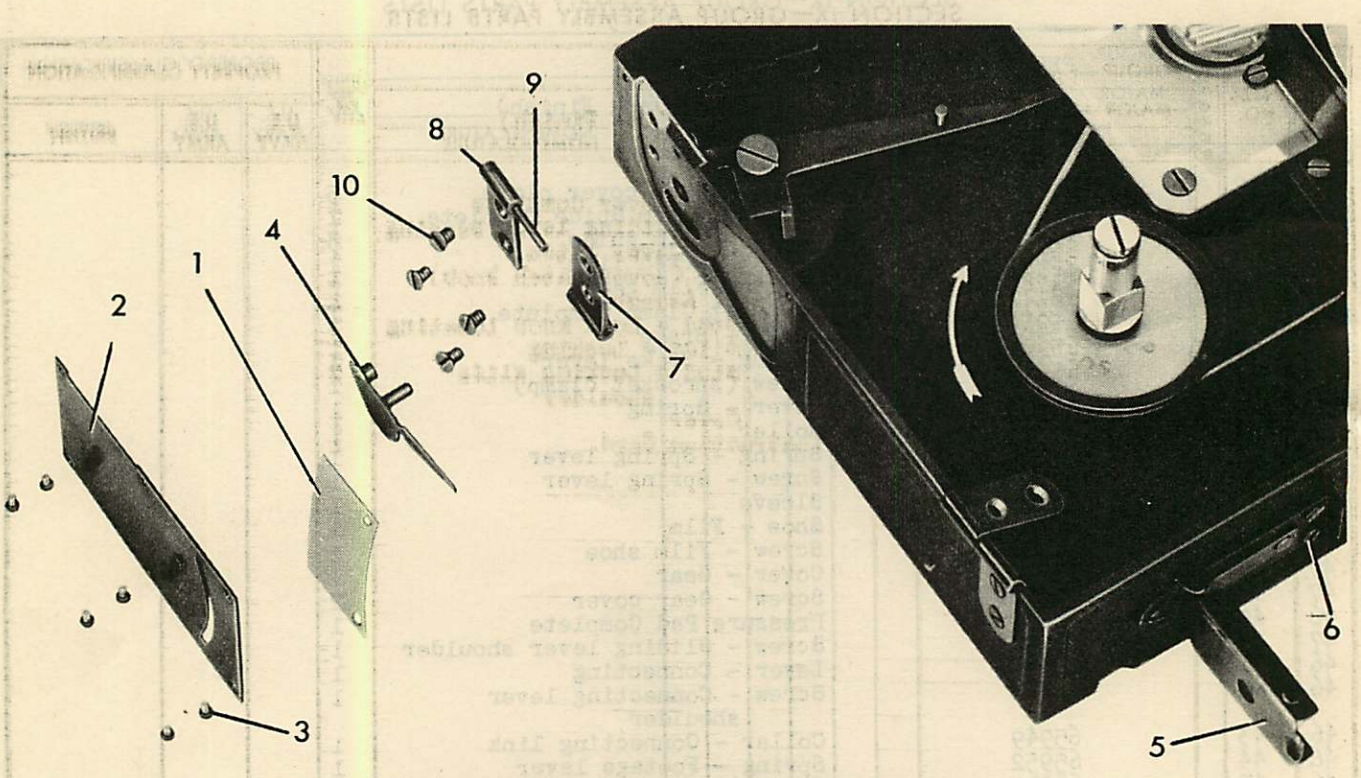


Figure 49—100-Foot Film Chamber Footage Indicator—Exploded

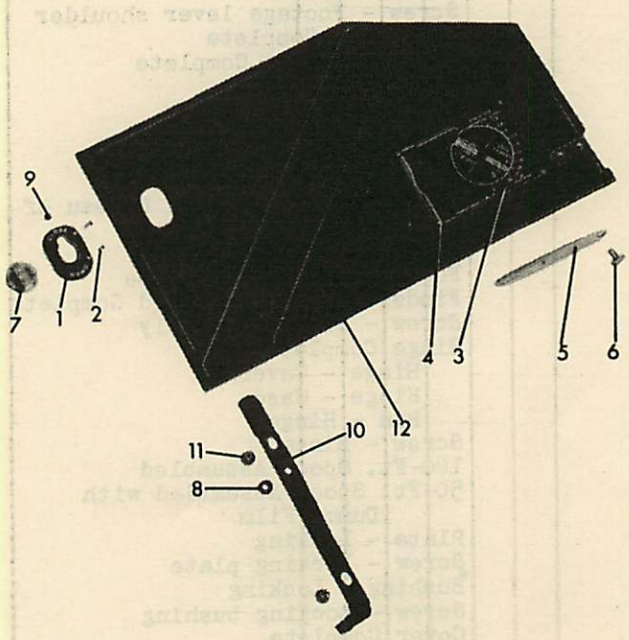


Figure 50—100-Foot Film Chamber Cover—Exploded

SECTION IX—GROUP ASSEMBLY PARTS LISTS

GROUP PHOTOGRAPHIC EQUIPMENT

MAJOR ASSEMBLY Cine-Kodak Special (Black Finish)

FIG. NO.	INDEX NO.	STOCKED	PART NUMBER	1	2	3	4	5	6	NOMENCLATURE	UNITS PER ASSY	PROPERTY CLASSIFICATION U.S. NAVY	U.S. ARMY	BRITISH
50	5		68203				Sliding Lever Complete				1			
50	6		65945				Stud - Sliding lever bearing				1			
50	7		65971				Knob - Cover latch				1			
50	8		65934				Washer (cover latch knob)				1			
			68222				Cover Assembled				1			
50	9		65935					Stud - Lock knob locating			1			
50	10		65936					Slide - Locking			1			
50	11		65937					Stud - Locking slide shoulder			2			
50	12		65927					Cover			1			
			76738				Instruction Card				1			

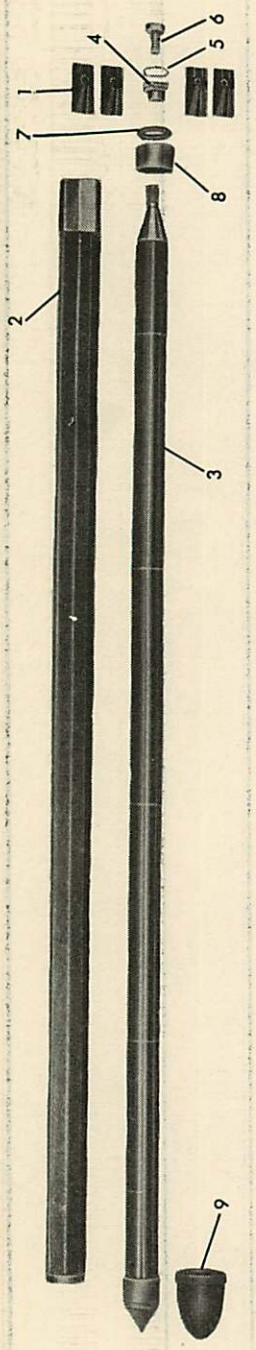


Figure 51—Tripod Leg Assembly—Exploded

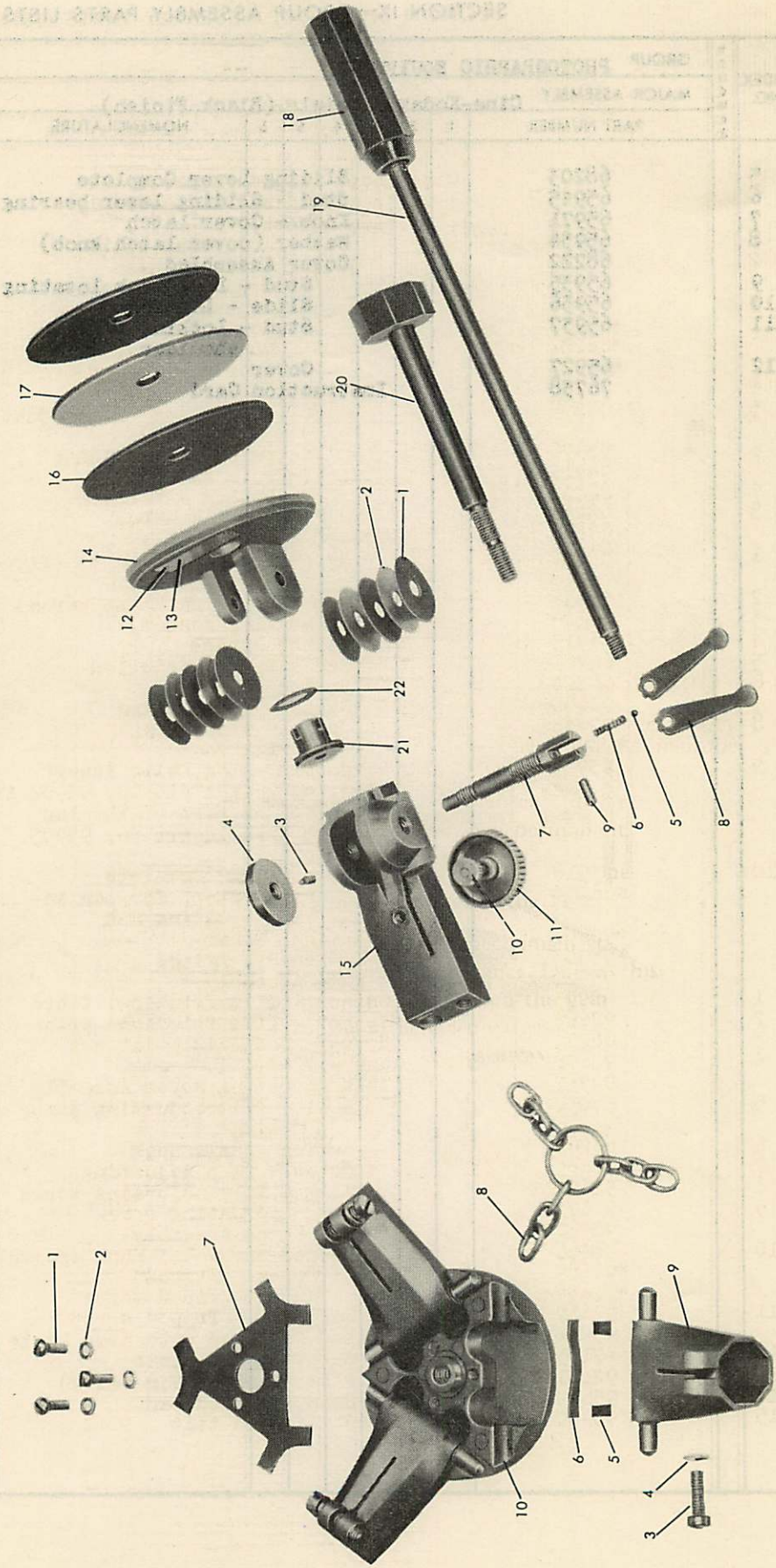


Figure 52—Tripod Head Assembly—Exploded

Figure 53—Tilt Head and Handle Assembly—Exploded

AN 10-10-48

SECTION IX—GROUP ASSEMBLY PARTS LISTS

GROUP PHOTOGRAPHIC EQUIPMENT

MAJOR ASSEMBLY Cine-Kodak Tripod Model 3

FIG. NO.	INDEX NO.	STOCKED	PART NUMBER	1	2	3	4	5	6	NOMENCLATURE	UNITS PER ASSY	PROPERTY CLASSIFICATION U.S. NAVY	U.S. ARMY	BRITISH
			93924	Cine-Kodak Tripod Complete							1			
			93923		Tripod Head and Leg Assembly						1			
			93915			Leg Assembly					3			
51	1		66288				Nut - Adjusting split				4			
51	2		94283				Leg - Octagon				1			
			93916				Inner Round Leg Assembly				1			
51	3		98487					Lower Leg Assembly			1			
			*66279						Leg - Lower		1			
			*66281						Cone - Leg adjusting		1			
			*92685						Spur		1			
51	4		66282					Nut - Leg adjusting			1			
51	5		73245					Clip - Spring (leg adjusting nut)			1			
51	6		92676					Screw - Leg retaining			1			
			93917					Ferrule Assembly			1			
51	7		66303						Ribbon - Ferrule		1			
51	8		93901						Ferrule - Leg		1			
			93919			Tripod Head Assembly					1			
52	1		33590				Screw (spring plate to tripod head)				3			
52	2		78618				Washer (spring plate screw)				3			
52	3		46845				Screw (leg socket)				3			
52	4		34715				Washer - Lock				3			
52	5		66291				Pad - Spring friction				6			
52	6		66300				Spring - Leg				3			
52	7		92680				Plate - Head spring				1			
52	8		92941				Chain - Tripod leg				1			
			*93902				Pin - Leg socket				3			
52	9		93905				Socket - Leg, with insert				3			
				Note: The leg socket pin No. 93902 is supplied as part of the leg socket with insert No. 93905.										
52	10		93918				Tripod Head Complete				1			
			*66294					Pin - Stop, for pan adjusting nut			1			
			*92682					Nut - Pan			1			
			*93903					Head - Tripod			1			
			93921			Tilt Head Assembly					1			
53	1		66273				Washer - Tilt friction, fibre				6			
53	2		92673				Washer - Tilt friction, brass				4			
53	3		66275				Screw - Lock pin (tilt nut)				1			
53	4		92672				Nut - Tilt				1			
			92952				Tilt Adjusting Screw Assembly				1			
53	5		57032				Ball - Tilt adjusting screw wing				1			
53	6		66269				Spring - Ball lock				1			
53	7		92669				Screw - Tilt adjusting				1			
53	8		92670				Wing - Tilt adjusting screw				2			
53	9		92671				Pin - Adjusting screw				1			
			92957				Tripod Screw Assembly				1			
53	10		98486				Tripod Screw and Knob Assembly				1			
			*92687					Screw - Tripod			1			
			*92688					Knob - Tripod screw			1			
53	11		92689				Lock Nut - Tripod screw				1			
			93922				Tripod Pan Head with Name Plate				1			
53	12		47185				Screw - Name plate				2			
53	13		92851				Plate - Name (U.S. Navy)				1			
53	14		93899				Head - Tripod pan				1			
53	15		93900				Head - Tripod tilt				1			

SECTION IX—GROUP ASSEMBLY PARTS LISTS

GROUP PHOTOGRAPHIC EQUIPMENT

MAJOR ASSEMBLY Cine-Kodak Tripod Model 3

FIG. NO.	INDEX NO.	STOCKED	PART NUMBER	1	2	3	4	5	6	NOMENCLATURE	UNITS PER ASSY	PROPERTY CLASSIFICATION U.S. NAVY	U.S. ARMY	BRITISH
			93920		Pan Friction Washer Assembly						1			
53	16		66295			Washer - Pan friction, felt					2			
53	17		93904			Washer - Pan friction, aluminum					1			
			92951		Handle Assembly						1			
53	18		66301			Handle, with Insert					1			
53	19		92683			Rod - Handle					1			
53	20		92684		Knob, with Pan Screw						1			
53	21		92674		Nut - Pan						1			
53	22		66276		Washer - Pan nut						1			
51	9		92549		Cap - Spur						3			

SECTION X—NUMERICAL PARTS LIST

PART NUMBER	GROUP LIST PAGE NUMBERS	TOTAL QUANTITY
AN936-A2	51	2
J25417	57	AR
J25421	57	AR
R-1	57	1
11987	55	2
19225	61	1
19273	55	3
3309	55,59	6
33590	65	3
33790	53	1
34715	65	3
35429	53	2
36133	50	9
38303	61	1
39	57	1
39694	53	1
39695	53	1
39932	53	1
42150	61	1
45	57	1
46	57	1
46156	59	1
46845	65	3
47185	65	2
47932	53	1
53482	49	3
53869	57	1
54609	50	4
54640	53	1
55285	51	2
55379	57	AR
57032	65	1
58025	51	AR
58177	57	AR
61374	57	AR
65655	50	1
65658	51,53	3
65659	53	1
65663	55	4
65666	55	1
65672	55	1
65680	55	1
65681	55	1
65682	55	2
65683	55	1
65684	55	1
65685	55	1
65686	55	1
65687	55	1
65688	55	1
65691	55	1
65693	55	2
65694	55	1
65696	53	1
65698	49	1
65699	49	1
65700	49	1
65701	49	2
65704	47	1
65705	47	1
65707	49,51	3
65708	53	1
65709	47	1
65710	47	1
65711	47	1
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65734	49	1
65735	49	1
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65738	53	1
65742	50	1
65743	49,51	3
65744	51	1
65751	50	1
65752	50	1
65753	53	1
65754	50	1
65755	51	1
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65759	50	1
65760	50	1
65761	50	1
65778	50	1
65782	50	1
65789	55	1
65790	55	1
65792	55	1
65794	50	2
65795	50	1
65796	50	1
65797	50	1
65799	47	1
65800	53	1
65801	53	1
65802	53	1
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65807	49	1
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65852	53	1
65855	51	1
65856	47	1
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65879	53	1
65889	55	1
65890	51	1
65896	49	1
65901	50	1
65904	50	2
65905	50	1
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65908	53	1
65911	53	1
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65927	63	1
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65937	63	2
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65940	61	1
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65967	61	1
65969	61	1
65970	61	1
65971	63	1
65975	59	1
65976	59	1
65977	59	1
65978	59	1
65981	61	1
65987	61	1
65988	61	1
65990	59	1
65996	59	2
66000	59	2
66003	59	2
66004	59	2

AN 10-10-48

SECTION X—NUMERICAL PARTS LIST

PART NUMBER	GROUP LIST PAGE NUMBERS	TOTAL QUANTITY
66006	59	2
66008	59	2
66010	59	1
66012	61	3
66013	61	8
66016	61	2
66018	61	1
66019	61	1
66020	59	1
66026	61	1
66027	61	1
66038	59	1
66040	59	1
66041	59	1
66042	59	1
66045	59	1
66049	59	1
66050	59	1
66052	59	1
66269	65	1
66273	65	6
66275	65	1
66276	66	1
66279	65	1
66281	65	1
66282	65	1
66288	65	4
66291	65	6
66294	65	1
66295	66	2
66300	65	3
66301	66	1
66303	65	1
66596	47	1
66899	47	1
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68688	57	AR
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76738	63	1
77337	61	1
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91736	49,55,61	7
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91738	53,59,61	24
91739	55	4
91741	55	1
91742	53,55,59 61	14
91746	51	AR
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91750	47	6
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92951	66	1
92952	65	1
92957	65	1
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93839	51	AR
93840	51	2 AR
93841	51	2 AR
93842	51	2 AR
93843	51	3 AR
93844	51	3 AR
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93846	51	AR
93847	51	AR
93848	51	AR
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93901	65	1
93902	65	3

AN 10-10-48

SECTION X—NUMERICAL PARTS LIST

PART NUMBER	GROUP LIST PAGE NUMBERS	TOTAL QUANTITY	PART NUMBER	GROUP LIST PAGE NUMBERS	TOTAL QUANTITY	PART NUMBER	GROUP LIST PAGE NUMBERS	TOTAL QUANTITY
93903	65	1	93921	65	1	94164	49	AR
93904	66	1	93922	65	1	94283	65	1
93905	65	3	93923	65	1	97116	59	AR
93915	65	3	93924	65	1	97117	59	AR
93916	65	1	94091	59	3	97118	59	AR
93917	65	1	94160	49	AR	97127	61	2
93918	65	1	94161	49	AR	97196	49	1
93919	65	1	94162	49	AR	98486	65	1
93920	66	1	94163	49	AR	98487	65	1
						9903	57	1